

RADIO **AMATEUR**

JULY 1993
Volume 61 No 7



Journal of the Wireless Institute of Australia



- Ferrite Choke Baluns
- Enhance the FT-411E
- Mini Packet Modem
- Review: SmartLog

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Amateur Radio is published by the Wireless Institute of Australia, ACN 004 920 745 as its Official Journal, on the last Friday of each month.

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Deadlines Editorial Hamads

August 12/7/93 14/7/93

September 9/8/93 11/8/93

October 6/9/93 8/9/93

Delivery of AR: If this magazine is not received by the 15th of the month of issue, and you are a financial member of the WIA, please check with the Post Office before contacting the registered office of the WIA. ©

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* Eric Jamieson VK5LP is still ill.

Cover

The new WIA Federal President Kevin Olds VK1OK finds a little time in his busy schedule to actually sit in front of the rig!

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs, that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Wireless Institute of Australia

The world's first and oldest National Radio Society Founded 1910

Representing the Australian Amateur Radio Service

Member of the International Amateur Radio Union

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FEDERAL QSP

This month finds me at the keyboard having just returned from New Zealand and the 67th NZART Conference where the Federal Vice President Neil Penfold VK6NE and I represented the WIA. It was an interesting experience seeing how our friends from across the Tasman go about their annual conference. We were able to attend the meeting of their Council as well as their Annual General Meeting and associated activities.

NZART is organised along very different lines than the WIA, being structured around branches, of which there are approximately 80, compared with our seven divisions. Of interest, however, were the similarities in the problems and issues which face amateurs in both countries. During its council meeting, many of the problems being addressed were the same as those addressed by the WIA's board, often with the same lack of answers. Problems of membership and finances beset us all, and not just in the amateur radio movement.

One very different aspect of the New Zealand scene is the management of the frequency spectrum. A much more commercial orientation exists within the administration, and it was useful to talk to a representative from the Radio Frequency Service, the equivalent of DoTC, during the conference.

The Minister of Communications, the Honourable Maurice Williamson, opened the conference, and his description of the government's attitude to the radio spectrum made interesting listening. The New Zealand government sees the radio spectrum as a resource to be managed, in much the same way as land is managed. There are commercial pressures which see parts of the spectrum sold to commercial interests for use under prescribed conditions. However, there are also community interests that must be served with land which requires the creation of parks and sets aside land for recreational and community purposes, so parts of the spectrum are set aside for community use. It is in this category that amateur radio falls in the view of the New Zealand government, and so its bands are preserved.

Such an attitude on the part of the government is of benefit to the Amateur Radio Service, and the NZART is indeed fortunate its government holds this view. It is an attitude which we need to foster in Australia. In the same way that there are legitimate reasons for preserving land for recreational and community purposes, so there is a case for preserving radio spectrum for the same reasons. However, in saying that, the same applies to us as to land usage — if we don't use our bands and allow them to fulfil the recreational purpose for which they have been established, then others will find a better use. The age-old cry is still just as valid today — use them or lose them.

Kevin Olds VK1OK, WIA Federal President

ar

Mini Packet Modem

Eric van de Weyer VK2KUR * joins the Packet revolution with this incredible project.

The following is a description of a mini modem for use with Baycom, SP or GP software (there may be others but the above are the only ones I know of at the moment).

This modem is a combination of ideas from several sources including Tom Moffat's Pocket Packet described in November 1992 and January 1993 Electronics Australia, Poor Man's Packet from August 1991 73 Magazine and The ZL Packet Radio Modem in November 1992 Break-In.

My first dabble into making my own modem was in January 1992, a couple of weeks after Dave VK2KFU introduced me to Poor Mans Packet

(PMP) during a lecture he gave at our local radio club on getting into Packet Radio. I am no newcomer to Packet having been using the mode for about four years now but was on the lookout for something small to use for portable operation (I have been Aeronautical Mobile on packet).

Dave furnished me with a copy of the article on PMP and a copy of the software. I lost little time putting together the Modem on a piece of veroboard in a small plastic box and got it up and running without any problems. When I told Dave this, he commented that he thought I was going to build it into a DB25 backshell

... so I did, complete with a 5 pin DIN socket on the back for the connection to the radio. I found a couple of drawbacks with the PMP modem, however. One was the fact that it had to run on the Parallel port of the computer, this meant that I couldn't use the printer with it except by saving everything to a log file and then printing it out afterwards. The second problem was that, running on my XT style Laptop, every time when packets were being received, I had to stop typing as the poor processor couldn't handle the keyboard simultaneously. Running it on a faster (286) machine, it did not exhibit this second problem.

In November of last year, EA ran the first of two articles from Tom Moffat on his Pocket Packet which really got me interested again in the concept of a Software TNC type of

WIA Divisions

The WIA consists of seven autonomous State Divisions. Each member of the WIA is a member of a Division, usually their residential State or Territory, and each Division looks after amateur radio affairs within their State.

Division	Address	Officers		Weekly News Broadcasts		1993 Fees
VK1	ACT Division GPO Box 800 Canberra ACT 2601 Phone (06) 247 7008	President Secretary Treasurer	Christopher Davis Hugh Blemings Don Hume	VK1DO VK1YYZ VK1DH	3.570 MHz LSB, 148.950 MHz FM, 438.525 MHz FM each Monday evening (except the fourth Monday) commencing at 8.00 pm. Repeated on Wednesday evening at 8.00 pm on 148.950 MHz FM.	(F) \$70.00 (G) \$85.00 (X) \$42.00
VK2	NSW Division 108 Wigram Street Parramatta NSW (PO Box 1066 Parramatta 2124) Phone (02) 689 2417 Fax (02) 633 1525	President Secretary/ Treasurer (Office hours	Terry Ryeland Bob Lloyd Jones Mon-Fri 11.00-14.00 Wed 1900-2100)	VK2UX VK2VEL	From VK2WI 1.845, 3.595, 7.146*, 10.125, 24.950, 28.320, 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 (*morning only) with relays to some of 14.180, 18.120, 21.170, 584.750 ATV sound. Many country regions relay via a local 2 metre repeater. Sunday 1000 and 1915. Highlights included in VK2AWX Newcastle Monday 1930 on 3.593 plus 10mx, 2mx, 70cm, 23cm. News headlines by phone (02) 552 5188. Some broadcast text can be found on the Packet network.	(F) \$66.75 (G) \$83.40 (X) \$36.75
VK3	Victorian Division 40G Victory Boulevard Aarhamts Vic 3147 Phone (03) 885 9261	President Secretary Treasurer Office hours	Jim Linton Barry Wilton Rob Halsey Tue & Thur 0830-1530	VK3PC VK3XV VK3XLV	1.840MHz AM, 3.615 SSB, 7.085 SSB, 53.900 FM(R) Mt Dandenong, 146.700 FM(R) Mt Dandenong, 148.900 FM(R) Mildura, 148.900 FM(R) Swan Hill, 147.225 FM(R) Mt Baw Baw, 147.250 FM(R) Mt Macedon, 438.075 FM(R) Mt St Leonard 1030 hrs on Sunday.	(F) \$72.00 (G) \$88.00 (X) \$44.00
VK4	Queensland Division GPO Box 638 Brisbane QLD 4001 Phone (07) 284 9075	President Secretary Treasurer	Ross Marren Lance Bickford David Travis	VK4AMJ VK4ZAZ VK4ATR	1.825, 3.065, 7.118, 10.135, 14.342, 18.132, 21.175, 24.970, 28.400 MHz. 52.525 regional 2m repeaters and 1296.100 0900 hrs Sunday. Repeated on 3.805 & 147.150 MHz, 1930 Monday	(F) \$70.00 (G) \$84.00 (X) \$42.00
VK5	South Australian Division 34 West Thebarton Road Thebarton SA 5031 (GPO Box 1234 Adelaide SA 5001) Phone (08) 352 3428	President Secretary Treasurer	Bob Allan Maurie Hooper Bill Wardrop	VK5BJA VK5EA VK5AWM	1820 kHz 3.550 MHz, 7.096, 14.175, 28.470, 53.100, 145.000 147.000 FM(R) Adelaide, 146.700 FM(R) Mt North, 148.900 FM(R) South East, ATV Ch 34 579.000 Adelaide, ATV 444.250 Mid North Barossa Valley 148.825, 438.425 (NT) 3.555m 148.5000, 0900 hrs Sunday	(F) \$70.00 (G) \$85.00 (X) \$42.00
VK6	West Australian Division PO Box 10 West Perth WA 6872 Phone (09) 388 3888	President Secretary Treasurer	Cliff Bastin Bruce Hedland-Thomas	VK6LZ VK6OO	146.700 FM(R) Perth, at 0930 hrs Sunday, relayed on 3.580, 7.075, 14.115, 14.175, 21.185, 28.345, 50.150, 438.525 MHz. Country relays 3.582, 147.350(R) Busseton 148.900(R) Mt William (Bunbury) 147.225(R), 147.250(R) Mt Saddleback 148.725(R) Albany 148.825(R) Mt Barker broadcast repeated on 146.700 at 1900 hrs.	(F) \$60.75 (G) \$84.80 (X) \$32.75
VK7	Tasmanian Division 148 Denwent Avenue Lindisfarne TAS 7015 Phone (002) 43 8435	President Secretary Treasurer	Andrew Dixon Ted Beard Peter King	VK7GL VK7EB VK7ZPK	146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.750 (VK7RNV), 3.570, 7.090, 14.130, 52.100, 144.100 (Hobart) Repeated Tues 3.590 at 1930 hrs	(F) \$67.00 (G) \$83.65 (X) \$39.00
VK8	(Northern Territory is part of the VK5 Division and relays broadcasts from VK5 as shown received on 14 or 28 MHz).			Membership Grades Full (F) Pension (G) Needy (G) Student (S) Non receipt of AR (X)		Three-year membership available to Australian resident (F) (G) (X) grades at fee x 3 times.
Note: All times are local. All frequencies MHz.						

Note: All times are local. All frequencies MHz.

packet setup. I eagerly awaited the second article from which I set about and built up the modem. I had in the meantime ordered and received a copy of Baycom 1.5e through the local agents, AAPRA. The modem worked first time and, although I still had a minor problem because of the computer speed, its operation was satisfactory. The main problem was that for anything but the short packets, it tends to take many retries to get them through. When tested on my 486, however, it worked perfectly.

Having now built the Moffat/Baycom modem, I was shown an article in November 1992 Break-In (NZART) by Ron Badman ZL1AI and Tom Powell ZL1TJA called the ZL Packet Radio Modem. This unit is essentially the same as the Baycom and PMP modems using the same main IC, the TCM3105 and a hex inverter but with the addition of an MAX232, RS232 to TTL level converter IC. This is a brilliant chip having on board two transmitting inverters, as well as two power inverters which, with the addition of four external capacitors, provide plus and minus 10 V supplies with a single plus 5 V

input. Its total current drain from the 5 V supply is about 5 mA. The ZL circuit used the MAX232 for receive data and transmit data to and from the computer as well as for PTT from the computer.

I had at this point decided to put together a printed circuit board for the project, with the aim of putting a PC mount DB9 at one end, a PC mount 5 pin DIN at the other end and the rest of the bits in between. As it stood, I needed three ICs. Could this be reduced to two?

- The three ICs I was looking at were
1. The TCM3105 FSK Modem IC
 2. The MAX232 interface IC
 3. A 4049 or 74HC04 basic hex inverter IC.

The first one I needed, the second I wanted to present the correct levels to the serial port of the computer. Could I do away with the hex inverter?

I decided that I could get rid of it if I were to leave out the transmit timeout facility as the transmit and receive data were already being inverted by the MAX232 and a simple transistor change would work for the PTT line. The only other place an inverter was needed was between

pins 2 and 5 of the TCM3105 to invert the clock pulses but that could be done with just a transistor and a couple of resistors as it is in the PMP modem. Thus it was that I eliminated the hex inverter chip.

As I thought about it, it suddenly dawned on me that there was still one inverter in the MAX232 not being used. It is a TTL in RS232 out one and I wondered if I could use it in the same sort of circuit as the original timeout circuit, which uses two inverters.

I lost no time in breadboarding it up, noting that the input to the inverter has a 400 K pullup resistor, which is a lot lower than the 3.3 M used in the original. I only needed to put in a larger capacitor and hey presto, it worked. As it turns out, the timing seems to work out as being one second for every ten micro-Farads therefore, a value of 220 μ F results in a 22 second timeout, more than adequate. This is what I settled on as I didn't have any 150 μ F caps in stock (the original timeout is about 14 seconds).

After this initial success, I decided to breadboard the rest of the modem on the same piece of socket strip and,

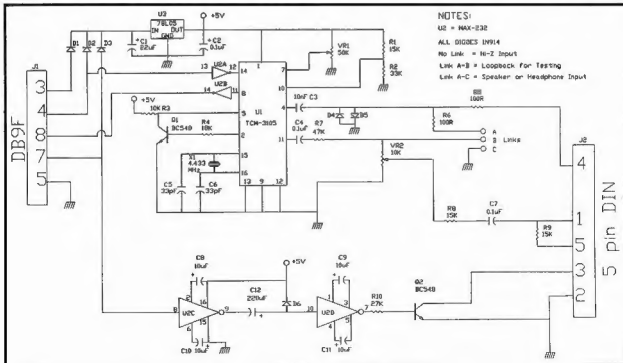


Figure 1 Full circuit diagram.

when plugged in, it worked perfectly. It still has the slight problem with the PC speed and retries on the laptop, but on the faster machine it works very well.

So now we come to the construction and the PC board. I will not include a description of how the device works as it can be got by reference to any of the articles referred to at the beginning of this article.

I started by drafting out the new circuit so that I could see what I really had to work with (see Fig 1). From this I designed the printed circuit board which, in its first incarnation, turned out to be a bit long to fit into any boxes I had available, so I redesigned it to shorten it so that it would fit in one of the little plastic zippy boxes available at Dick Smith and others (see Fig 2 and Photo).

The actual construction is quite straightforward, there are no hidden tricks, no links to forget and, when finished, there should be no spare holes.

Most of the components are not very critical with all the polarised capacitors except the 220 μ F timing capacitor, C12, being a small electrolytic while all the others are tantalum. Make sure that C12 is as small as you can find so that it will fit in the space on the board. The two trim pots are multiturn, which makes for much easier adjustment although the adjustments are not all that critical. The 10 K (VR2) is the audio level out to the transceiver while the 50 K (VR1) is the receiver threshold adjustment. I have found that on all the units I have built to date that if I set both of the pots to their mid position, the unit works straight away and can then be adjusted for best results.

The most expensive part of the whole unit is the TCM3105 chip, which, from Farnell Electronics cost around \$23.00. The next are the MAX232 and the 4.433619 MHz crystal. Not everyone stocks the 5 pin DIN PCB mount socket but both Alltronics and Rod Irving have it in their catalogues.

Probably the best method of construction would be to put in all the small components first, then the larger ones followed by the two ICs

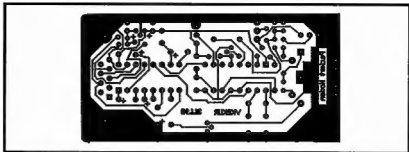
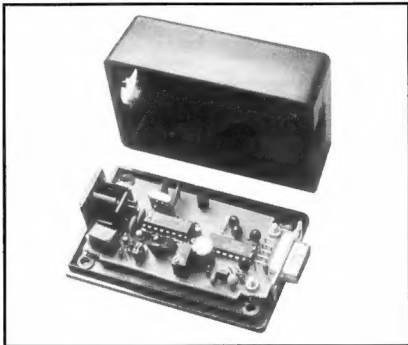


Figure 2 Actual size PCB pattern viewed from component side.



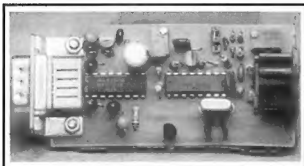
Overall view of the Mini Modem mounted in the zippy box.

and finally the two sockets although this is not necessarily the way I did it when I made mine. I found that the right angle DB9 connector for the computer would just fit into the 0.8mm holes I had drilled in the board but I needed to use larger ones for the DIN socket and the 3 pin header for the jumper. All the resistors except R10 (27 K) are mounted vertically on the board.

The purpose of the jumper is to either have a high impedance input from the receiver if taking the audio from somewhere like the volume control hot lead, this is with no jumper installed. If running the unit from the audio output of the transceiver, putting the jumper to the ground side

(towards the outside edge of the PCB) provides a load for the output stage. The other position provides a loopback from the output of the TCM3105 back to the input for testing purposes. This can be used for setting up the receive threshold if some way of providing a 50% duty cycle input to the TCM3105 is available.

During the prototyping of the board I tried a different method of producing the PCBs. It was suggested by Glen Andersson from Ashfield NSW in the February 1992 Silicon Chip magazine. The board was designed using Easytrax and a printout done on a laser printer. The printout was then laid onto the cleaned copper of



View of the Mini Modem showing component locations.

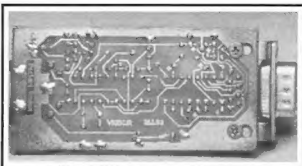


Photo showing underside of PCB.

the board and ironed on with a normal iron set to "cotton". Once the board had cooled, it was put into warm water for a few minutes to soak. Once removed, the paper was carefully peeled off, leaving the image on the board. The toner of the laser print is an excellent resist and I only had to touch up in a few spots to get very acceptable results. See photo. The only chemical involved in the whole process is the actual etchant with the whole process taking about 15 minutes from printout to finished board.

Please note that the connections for this modem to the computer do NOT use the normal transmit and receive data lines. Also, the 5 pin DIN connector uses the same pinouts as many common TNCs such as the Tiny-2 and TNC-220 and I think many others.

I hope that this article is of use to some of you and it also proves that there are some of us out here who still tinker around and build things.

Components List for the Mini Baycom Modem

Capacitors

C1	22 μ F 16V Tantalum
C2	0.1 μ F Monolithic
C3	10 μ F Greencap, Ceramic etc.
C4	0.1 μ F Greencap, Ceramic etc.
C5,C6	33 pF Ceramic
C7	0.1 μ F Ceramic etc.
C8-11	10 μ F 16V Tantalum
C12	220 μ F 16V Electrolytic

Resistors

R1	15 K 0.25W
R2	33 K 0.25W
R3	10 K 0.25W
R4	18 K 0.25W
R5,R6	100 Ω 0.25W
R7	47 K 0.25W
R8,R9	15 K 0.25W
R10	27 K 0.25W
VR1	50 K Multiturn pot
VR2	10 K Multiturn pot

Transistors etc

Q1,Q2	BC548 etc.
D1-6	1N914, 1N4148 etc.
U1	TCM-3105 FSK modem chip
U2	MAX-232 RS232 to TTL level inverter
U3	78L05 low current voltage regulator.
J1	DB9M Right angle PC mount connector
J2	5 pin DIN right angle PC mount connector

Crystal

X1	4.433619 MHz Crystal (PAL colour burst)
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Miscellaneous

3 pin header and jumper
Printed circuit board.

* 48 Cambridge Avenue, Vaucluse NSW 2030

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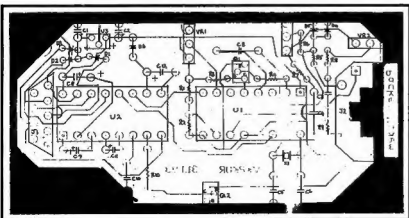


Figure 3 Component overlay viewed from component side.

**Have you
advised the WIA
Federal Office
of your new
callsign? Use
the form on the
reverse of the
Amateur Radio
address
flysheet.**

Profile of a President — Kevin Olds VK1OK

Kevin's interest in amateur radio was kindled in 1978 when he decided to get a licence and get into the interesting stuff he'd seen his father do for many years. He passed the theory and regulations in 1978, and held the limited call VK1ZAD until finally passing the morse code and obtaining his full call in 1980. Since then he has pursued his interests as time has permitted. He is interested in the technical side of the hobby, and enjoys home construction of equipment and accessories. On-air activities have included rag chewing, packet radio, computers in amateur radio and ATV. Much of the equipment he uses for packet and ATV is of the home-built variety.

His involvement in the non-radio side of the hobby commenced in 1980 when he joined the ACT

Divisional Council as Treasurer, a position he held for six years. That was followed by two years as the ACT Division's Federal Councillor.

Much of the equipment he uses for packet and ATV is of the home-built variety.

Kevin served on the then Federal Executive in the role of ACT Division's Federal Councillor when the Executive was first restructured. Following retirement as Federal Councillor he continued to serve on the Executive until it contracted into the present Board in 1992. At that time he assumed the role of WIA IARU Region III Liaison Officer, having been part of the WIA

delegation to the IARU Region III meeting in Bandung in October 1991.

In his working life he is an Information Technology Consultant, being part owner of the firm for which he works, mainly in consulting to Federal Government Departments.

His station today comprises a Yaesu FT990 HF transceiver with Yaesu FL-2100B Linear for those hard times, a Yaesu FT625R all-mode for six metres, Icom IC211 all mode for two metres and Icom IC390 all mode for 70cm. Icom and Kenwood handhelds and mobile rigs complete the radio side. The major antennas are a TH3 JR tribander for the higher HF bands and an inverted vee for 40 metres. Az-El mounted 2m and 70cm antennas double for satellite and terrestrial work.

The major items on the home-built front are a spectrum analyser covering up to 500 MHz, a VADCG TNC+ with 300, 1200, 4800 and 9600 home-built modems, RTTY and Amort units, ATV transmitter, 1 GHz frequency meter and sundry other items.

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Ferrite Choke Type Baluns

by the late Clive J Cooke VK4CC

The use of ferrite beads threaded on to appropriate conductors of offending appliances to reduce RFI has been with us for some time now. However, very little information has been published in Australia on the use of ferrite beads in constructing baluns for use in antenna design, though the trend overseas is to favour that type in preference to the toroidal transformer type whenever that is possible. The ARRL in fact now actively discourages the use of the transformer balun as may be inferred from the note on pages 28-18/19 of the 1992 (16th) edition of the ARRL Antenna Handbook.

Two excellent articles on the use of ferrite bead baluns have been written by Walter Maxwell (QST March 1983) and John Belrose (QST June 1991). Belrose gives constructional information of 1:1, 4:1 and 9:1 choke baluns as shown in diagrams below. At this juncture it should perhaps be explained that the ferrite mix used in suppression and choke balun application differs considerably from that which should be selected for toroidal transformer applications. The latter must have high resistivity and inductivity, whereas the former must have low resistivity and inductivity to quickly absorb induced eddy currents from RF currents.

A feature of the baluns described by Maxwell and Belrose which did not appeal to me was that their choice of beads necessitated the use of smaller than usual diameter coaxial cable such as RG174 or similar, which in turn had to be joined in series with the larger diameter coaxial cable used in an antenna installation. I therefore decided to take a risk after consultation with the Sydney-based office of Neosid Australia P/L and ordered a quantity of its 7 Mix ferrite rings under the code name of 28-013-27, and also a lesser number of model 28-033-27. The 28-013-27 rings fit nicely over RG58CU cable, and the larger 28-033-27 slips over 10mm diameter cable such as RG213.

Editors' Note — This article was in the final stages of preparation for publication when Clive Cooke passed away. With the permission of Clive's family, we have much pleasure in publishing his final work in the interests of the hobby, which I am sure Clive would have wanted ... Bill Rice VK3ABP, Editor.

Construction

In the construction of a 1:1 balun I took the risk of using only 30 beads and, of course, 60 beads for a 4:1 balun. Test results have been outstanding; in fact, with 50 watts into the 4:1 balun using a 200 watt non-inductive resistive termination absolutely zero reflected power registered on the SWR meter. Testing of the 1:1 balun is not quite as simple as will be understood if the article by Belrose is read. It requires the use of a centre-tapped 50-ohm resistor, something which I could not acquire. However, "scrunch" tests of the balun connected to a twin transmission line satisfied me that both sides of the line were indeed "hot" even though one side was connected to the earthed braid of the balun. It is now in service on an experimental two-element "log cell" two-band beam.

The 4:1 step-up balun is now used between my unbalanced output ATU and a twin line feeding a 40m horizontal quad loop fed at one corner for all band operations with much success. No longer do I cause loss of colour in our main TV set when I am on the 3.5 MHz band, indicating a definite improvement in line balance compared with the previously used toroidal 4:1 step-up balun. The transmission line of the TV receiver is fairly close to that used for transmission purposes at one point.

At this stage the larger 28-033-27 rings have not been placed into service, but it is believed that 10 of those larger rings will be adequate for use on any tri-band beam, and might even be satisfactory for the lower bands, though one should be prepared to add more beads if necessary.

Afterthoughts

The results are really outstanding and I now use a 1:1 and a 4:1 setup in my antenna system. The first for a two element Yagi, and the other for feeding a tuned line with an ATU for all band operation of a 7 MHz horizontal loop.

When I ordered the beads, on advice from Neosid, I also ordered a quantity of larger diameter beads intending to try them for performance on the larger diameter 10mm coaxial cable, such as RG8.

I have only just discovered that the diameter is far too much in excess of what I consider to be required for the job to be done with them, so after recent telephone discussions with Neosid, I have been assured that the smaller diameter ferrite ring having the code name/number of 28-522-27 will do the job nicely. It has an inside diameter of 12mm, so is just right for 10mm coax.

Therefore, in light of the foregoing, for RG58CU type coaxial cable, use Neosid type 28-013-27, and for the larger diameter cable such as RG8 having 10mm diameter, use Neosid type 28-522-27 ferrite rings.

The 28-522-27 are enamel covered. I believe 30 beads would be required for a 1:1 balun over the range of 1.8 to 30 MHz. Probably 15 would be sufficient for a beam 14 to 30 MHz. Double the quantity for a 4:1 balun of course.

At the time of purchase the smaller rings cost me 59 cents each, plus 30 per cent ST, plus \$5 packing and postage, being \$27 for a 30-bead balun which, considering its efficiency compared with a toroidal cored transformer type, is, in my opinion, very reasonable.

It should be clearly understood that I have not undertaken tests at VHF or UHF, for which a different mix might be required as with the Amidon brand. My tests have been solely for HF use.

Choke Balun

In reference to the use of a choke balun on a G5RV type antenna which was featured in AR December 1992, I was interested to note that the article was more like an advertisement for the product of VK6BIL than information of practical use to amateurs.

Bill VK6BIL has since written to point out that he is not acting as an agent, and sent the information for general consumption. He uses one of these baluns with great success. We apologise if the publication gave an incorrect impression.

The type of ferrite material, model and manufacturer etc was not disclosed, nor was any reference or credit for the design given to the originators of the idea, who as far as I know were Walter Maxwell and John Belrose. (Refer QST March 1983, pp 38, 39, 40 for article by Maxwell, who has published a book available from Stewarts for about \$40). The article by Belrose VE2CV is, in my opinion, more enlightening as a follow-up to the information given by Maxwell. Refer QST, June 1991 for full article, pp 30, 31, 32, 33. In the latter article the construction of, not only a 1:1 choke balun is given, but also a 4:1 and a 9:1 choke balun. All VERY informative, I found, and as a result, unless I am after a ratio other than one of those, I am henceforth committed to the use of "choke" type baluns instead of ferrite toroidal types. I am more than satisfied with results, to the extent even of using the beads directly over the coaxial line feeding my two-element home-brew trapped rotary beam. Not even bothering to use a high grade Japanese rod type sent to me as a gift from Japan.

I have spent approximately \$300 acquiring the correct type of ferrite material beads for HF band operation, and have had lengthy and costly telephone discussions with the supplier of the ferrite rings — Neosid, Australia Pty Ltd. The address is 23-25 Percival St, Lilyfield, NSW 2040. I have presented many of my amateur friends with samples for trial in Japan, USA and UK.

Just slip them on and secure in position with a couple of plastic tie strips. No need for any SO239

connector which becomes necessary, of course, if one uses the smaller diameter coax used by Maxwell, such as RG274 etc.

The testing of the effectiveness of a choke balun becomes complex in the case of the 1:1 choke balun, as the terminating resistor must be centre tapped and earthed back to the main earth system. The 4:1 step up (50/200 ohms) is easier to test as it only needs one 2000 ohm non-inductive resistor. Over the entire range 1.8-30MHz, no reflected power at all on the SWR meter and, as I said in my article, it cured my 80m TVI problem by balancing tuned line from ATU more accurately than I could obtain with transformer (Voltage) toroidal types. One has only to recall just how precise one must be in adjusting for balance of carrier suppression in a SSB rig to appreciate that the rather rough windings of a toroidal transformer would be unlikely to give perfect balance to earth on each side of CT. I used to lose the colour in our TV set when I transmitted on 80 metres, and also picked up some line oscillator from the TV in my receiver.

Not now though. In fact I have also plastered the TV feedline input with these "worry" beads just to make sure. The feedlines are in proximity to each other. Note I did not say CLOSE proximity. What else is there other than CLOSE proximity. DISTANT proximity??? Hi!!!

It concerns me that some amateurs might purchase the incorrect ferrite material and be disappointed with the results. There is an important difference between the material intended for use as a transformer and that used for suppression purposes, such as is required with the choke balun. By the way, I used 30 rings for the 1:1 balun, and of course 60 and 90 for the higher ratio baluns. That gave me 1.8-30 MHz coverage nicely, though probably 15 rings would do for a 1:1 for 14-30 MHz. I have not delved into the VHF types to use at this stage. For the choke balun and for suppression bead purposes, Neosid has a special mix F7, an addition to the suppression bead range. For suppression purposes the ferrite mix materials must provide for high initial

inductance (Li) and LOW resistivity. In material used for transformers, the Li is not quite as high, according to my information, but resistivity is high over a much higher frequency range than the suppression type. The idea is that for suppression purposes the relatively low resistivity more readily "consumes" the eddy currents; quite an involved arrangement, and many pitfalls for the unwary.

So, if you wish to obtain a Neosid range for your information the cost to me was 59 cents each plus 30 per cent sales tax, plus \$4 packing and postage for the smaller rings, and the larger rings cost me 89 cents plus ST and postage as above. I do not think you would have any problems getting them direct from Neosid, though they guard their specs pretty closely. Hil I spoke to Paul Michaelis who runs the show.

I would not consider "potting" the beads. Capacity might be a problem, and they do not like too much heat if it is surrounded with epoxy curing. The G5RV against ground might be okay if the feedlines were paralleled and fed against ground. ar

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Enhanced Receiver Performance of the FT-411E

Law Whitbourn, VK2ZIP * describes an enhancement to the receiver front end.

The Yaesu FT-411 hand held was the first of the very small full featured 2m FM hand helds and came onto the market in 1988 or 89, and has been very popular ever since. It has been widely reviewed, in AR in June 1989 and January 1990 and in *Amateur Radio Action* Vol 12, No 3 (11 July 1989).

With a simple modification available at Dick Smith Electronics its receiver coverage can be expanded to 130-174 MHz. In my review in AR in January 1990 I showed its measured sensitivity and image rejection over this full range of frequencies. Its sensitivity was somewhat less than flat over the full range and, because of the very broad receiver front end, it exhibited some overload problems.

The FT-411E was released early in 1991 and boasted enhanced receiver performance. In a review in *Amateur Radio Action* (Vol 14, No 5: 3 September 1991) Tom Moffat alluded to the flatter sensitivity curve and

improved strong signal handling of the FT-411E. In this article I show the measured performance of the FT-411E receiver. It is so much better than that of the FT-411 that I actually bought one!

Figure 1 shows the sensitivity to signal and image frequencies of the original FT-411, as published in AR in January 1990. I show the image at the actual frequency where it occurs, to demonstrate that the receiver front end does not have any variable tuning. As a result the image curve(s) are continuous extensions of the main sensitivity curve, as shown in the figure. The image is broken into two parts, one overlapping the top end of the tuning range of the radio from 164.600 MHz to 191.595 MHz and the other overlapping the bottom end, from 122.4 MHz to 139.4 MHz.

This is a consequence of the receiver switching from high-side injection to low-side injection at 156.995-157.000 MHz. (A detailed explanation is given in the original

review). As the figure shows, the sensitivity is not very flat over the full 130 to 174 MHz range and the image rejection is not very good outside the primary 144-148 MHz range of the receiver.

Figure 2 shows the corresponding sensitivity to signal and image of the FT-411E. A number of important differences are immediately apparent. Firstly the sensitivity is much flatter over the full 130-174 MHz range. Indeed the sensitivity is better than 0.3 μV for 12 dB of noise quieting for all frequencies between 137 MHz and 174 MHz and is still 0.6 μV at 130 MHz. Secondly, the image curves are no longer continuous extensions of the main sensitivity curve, showing that there is some tuning taking place in the receiver front-end, and the image rejection is generally somewhat better. Thirdly, there is a small jump in sensitivity as the receiver tunes from 156.995 to 157.000 MHz, showing that there is some switching in the front-end selectivity circuit as the radio jumps from high-side to low-side injection.

I compared the circuit diagrams of the FT-411 and FT-411E to understand how the improved performance is achieved. The small jump in sensitivity as the radio tunes from 156.995 to 157.000 MHz shows that it still switches from high-side injection to low-side injection in the same place. A slightly increased first IF frequency, up from 17.3 MHz to 21.7 MHz, pushes the image frequencies further out from the main tuning range of the radio, which improves image rejection somewhat. Also, my subjective assessment is that overload performance is improved, so possibly the 21.7 MHz crystal filter is of slightly better quality than the original 17.3 MHz unit. The remaining improvement to explore is the flatter sensitivity from 130 MHz to 174 MHz.

I started out looking for track tuning of the receiver front-end filters but was disappointed. What I found was diode-switched lumps of capacitance to two of its three front-end helical filters, which are switched in for frequencies below 156.995 MHz and switched out for frequencies above 157.000 MHz. I don't fully understand the circuit and the extra capacitance may be that of the diodes themselves,

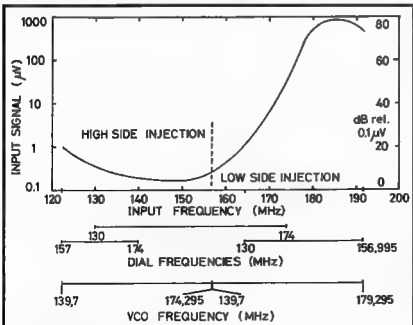


Figure 1 — FT411 Receiver Sensitivity

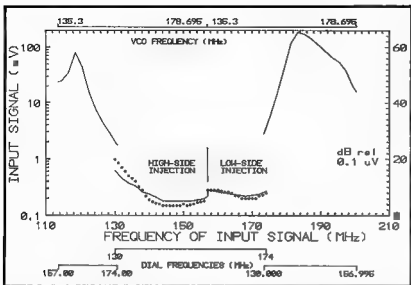


Figure 2 — FT411E Receiver Sensitivity

each being half of a type ISS184 twin diode package. This switched capacitance is what causes the small jump in sensitivity at 157 MHz. So the FT-411E front end now covers the 130 to 174 MHz range in two pieces, 130 to 157 MHz and 157 MHz to 174 MHz, making it easier to achieve flat tuning over the full range. This would also contribute to strong signal performance a little, because at any one time the receiver is looking at only half the 130 to 174 MHz range with full sensitivity. This simple trick substantially improves the performance of the FT-411E, without the complication of implementing full track tuning.

As always the sensitivity measurements that I show here are signal level required to produce 12 dB quieting of the receiver. This is an easy measurement requiring a signal generator and a simple audio millivoltmeter. It would be better to do SINAD measurements, which are generally what the manufacturers specify, but I do not have access to a SINAD meter. However, I have always believed that the signal required for 12 dB quieting would not be much different from that for 12 dB SINAD, or 12 dB signal to noise plus distortion, for a well aligned receiver (eg a new one).

I had a chance to check this hypothesis when Chris Ayres from Dick Smith Electronics gave me a

copy of DSEs SINAD measurements for an FT-411E, which I show plotted as points in Figure 2. There is very close agreement between the curves for 12 dB SINAD and 12 dB noise quieting, as expected. To be completely honest, I should point out that these two sets of measurements were done on two different radios. There is a small chance that these two radios had different sensitivities and that the SINAD and noise quieting measurements just happen to be the same, but this is very unlikely to happen so accurately over such a wide frequency range.

I think it is more likely that this comparison shows that different radios are very similar to each other and the two measurement methods

also give very similar results! This is not to denigrate the value of SINAD measurements, which are vastly superior for receiver adjustment purposes. It is possible using an audio millivoltmeter to adjust the crystal filter matching circuits of a radio to give fantastic receiver quieting figures, only to find that the resulting IF bandpass characteristic is far from flat and gives terrible distortion of recovered audio!

The SINAD measurement, working with a sine-wave modulated signal and measuring both noise and distortion, does a much better job of optimising the overall performance of a receiver.

Since I mentioned the manufacturers specifications I should say that the FT-411E has a guaranteed sensitivity of better than $0.158 \mu\text{V}$ for 12 dB SINAD (144-148 MHz). The DSE measurements show $0.15 \mu\text{V}$ and my measurement in this frequency range was $0.18 \mu\text{V}$ for 12 dB noise quieting.

Birdies

Every broadband receiver has some birdies — where it hears weak signals from its own frequency generation and control circuitry. I have started counting birdies from different receivers to allow some quantitative comparisons to be made. The number of birdies encountered obviously depends on the frequency step size and the squelch setting in use. Here are some typical results, obtained by letting the radio scan from 130 to 174 MHz with the antenna disconnected.

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Squelch at threshold

- 5 kHz steps : 23 birdies
 - 25 kHz steps : 10 birdies
- ### Squelch tight

- 5 kHz steps : 7 birdies
- 25 kHz steps : 3 birdies

The three strongest birdies are at 166.950 MHz, 171.400 MHz and 173.350 MHz. These are all well out of the amateur band. There are no birdies between 142.750 and 148.600 under any circumstances.

Conclusion

The FT-411E leaves little to be desired in a 2m FM hand-held. It is due to be replaced by the FT-415, which is a little smaller and has a number of new features, which are listed below:

1. A (top-mounted) external power socket and associated battery charging capability.
2. DTMF paging facilities.
3. A choice of either indefinite or momentary display and keyboard lighting.
4. Less memories (41 instead of 49 with the FT-411E).
5. Correct ARS (Automatic Repeater Shift) for the Australian 2-metre bandplan, which can be disabled.
6. Four power levels: 5 W, 3 W, 1.5 W and 0.5 W (with 12 V supply).
7. Optional BUSY light disable.
8. Intelligent battery saver which adjusts saver cycle time according to current pattern of usage.
9. CTCSS scan with optional FTS-17A module.
10. Better audio.
11. Track tuned front-end.

If the last FT-411Es are cleared out at bargain prices they will be worthy of very serious consideration by users who decide that they don't need all these new features. One issue, possibly the most important for city operators and irrelevant for country operators, is receiver quality. Although I said above that the overload performance of the FT-411E was much better than that of the FT-411, please note that I did not say that it was excellent.

Although I am very happy with my FT-411E (and I live in Sydney) I am aware of its limitations. Its receiver is not always happy if connected to a base antenna or to a roof-mounted

vehicle antenna in the city. The reason is probably that it has a very broad front-end and uses bipolar transistors rather than dual-gate FETs in its RF amplifier and mixer stages. Some other handhelds do better in this department. Indeed, in a recent comparison of ten 2 m handhelds from five manufacturers in QST (October, 1992) the FT-411E was found to be by far the worst for 3rd order intermodulation distortion, to the extent that QST measured two units to make sure that the measurement was right, while the FT-415 was found to be about average, which was quite acceptable.

I still wonder whether they got it right because they also found receiver sensitivity outside the two meter amateur band to be inferior, which does not agree with the measurements shown in Figure 2 (also for two different transceivers) and would be more consistent with my earlier measurements on the FT-411 (Figure 1).

Despite these quibbles, it does seem likely that the FT-415 will have better overload performance than the FT-411E. The recently released FT-26, which replaces the FT-23, was reported to have very acceptable overload performance in a recent issue of ARA (Vol. 15, No. 8: November 92). Study of the circuits of the FT-415 and FT-26 shows that they have identical front-ends, using a single 2SC4537 bipolar transistor RF amplifier with four track-tuned

filters feeding a 2SK882Y J-FET mixer to a first IF of 17.7 MHz. This looks better than the front-end of the FT-411E. So, for those needing better overload performance than that of the FT-411E, the FT-415 could be well worth waiting for.

Technical Editors Note

Whilst sensitivity is important the strong signal performance is also very important. Intermodulation, blocking, and cross-modulation are very important parameters. This is especially so in the larger cities and many other places where a handheld radio may be expected to operate.

Many amateurs suffer disturbances from other services. Services operating on adjacent allocations often produce very high signal strengths. Consider also the plight of operators living close to beacons, repeaters, and packet BBS's.

The problems of interference or disturbance from adjacent strong signals are well known. In Nov 1992 QST Dr Ulrich Rohde DJ2LR/KA2WEU noted that the dynamic range required for VHF/UHF receivers may well be higher than for HF receivers.

Hopefully with the increasing problem of strong signals the equipment manufacturers will move to address the problem. Techniques exist to solve many of the problems.

** PO Box 218, Lindfield, NSW, 2070.*

AR

WIA News

No Plans for VHF Pagers

In March, the Federal WIA's Secretary/General Manager, Bill Roper VK3ARZ, queried the (then) Department of Transport and Communications' future plans for the Paging Service which uses the band from 148 to 150 MHz.

A reply from Alan Jordan, of DOTC dated 10th May said that the Department "...has no plans to make any changes in the short term to the Paging allocations as detailed in VHF High Band Frequency Band Plan. (Statutory Rules 1991 No.354)".

Alan Jordan, who is director of DOTC's Technical and Operational Policy and Procedures Section of the Radiocommunications Operations Branch, qualified his reference to "short term" by saying that it "...should be interpreted as 'not precluding changes in the long term' rather than 'there are changes planned for the long term'."

So, our two metre repeaters and transceivers which use the top end of the band will have to co-exist with paging services on 148-150 MHz for the foreseeable future.

Software Review

SmartLog Logging Program

Evan Jarman VK3ANI gives his unbiased review of a computerised log book, and it looks most respectable.

Every amateur should keep a log of activity. Most prefer to keep more than the regulations require, generally for uses other than satisfying the radio inspector. Entering contacts in a log book is a minor part of their function. Once recorded, information must then be found when needed.

It is in the area of information retrieval that computers excel, in fact it would be their major commercial use. Radio logs are a data base and so can be treated like any other data base by a computer. There have been quite a few programs to computerise radio logs (some published in the pages of this magazine) but most neglect to use a computer's ability to sift, search, sort and merge information. It is a shame to neglect this capability; after all computers are the servants of mankind, never the other way round. Commercial data base programs are big business and are therefore quite elaborate. This enables them to be tailored for any system including a radio log, but this would be a waste of money, and effort.

SmartLog is a data base program written to give many data base facilities to the radio log. It is a program whose operation is similar to commercial software such as Lotus Symphony. It is DOS based and accepts single key instruction: it does not use a mouse. Single key instructions generally mean that typing the first letter of a instruction sets the computer to work. The instructions in the menu hardly vary, so the instructions are universal, no matter where in SmartLog's fields you are. The exception being configuration which is not part of normal operation anyway. As an example to "Find" an ASCII string just type "F" and process starts. As an added advantage, a menu appears at the bottom of the screen giving most of the possible menu selections.

Operation of SmartLog, like any good data base involves linkages between items on a number of smaller lists. As an example, when a callsign is entered, the ITU callsign list is searched to find the country. So automatically the country is displayed

The authors have put a good deal of thought into writing this log program to tailor it for amateur usage.

with continent, ITU zone and even bearings to enable aerial adjustment. Operating in this way means that as things change the program can be modified to suit. The ITU radio prefix list can be modified to account for new call sign allocations as they occur: which is frequently. The system is dynamic, not rigid, and so is not rendered obsolete by change.

SmartLog can be divided into three sections: data entry, data retrieval and configuration.

Log entry is by way of a note pad which enables information to be modified if necessary before becoming part of the log. No log entry is possible without a RS(T) exchange being recorded. The program keeps a check on notepad entries to ensure complete recording before notepad entries can be transferred to the log. Incomplete records are an enormous problem when retrieval is attempted. It means that you can only guess what a value should be, which is generally unacceptable.

The program handles items such as QSL sent/received and stores QSL manager information. A number of award codes can also be entered, the use of which is covered later.

Retrieval of information is the main purpose of any log. If no one was to read the log, why keep one? SmartLog uses the computer's ability to process information to make retrieval much more "user friendly". The whole log can be sorted chronologically (normal log book style) or alphabetically using the call sign entries. The latter is especially useful for finding the exotic callsigns or grouping together stations of



SmartLog Notepad and NetLogging Facility showing entered details.

Technical Abstracts

Gil Sones VK3AUI

Product Detector

A recent QST article by Dr Ulrich L Rohde KA2WEU/DJ2LR in QST Nov 1992 included a different product detector with extra dynamic range. The product detector used CMOS switches to demodulate the SSB IF signal and the dynamic range claimed was 25 dB greater than a conventional design. The design requires a two phase BFO signal but this is easily provided by feeding the sinusoidal BFO into a CMOS Schmitt trigger and then into an inverter. This gives the required square wave and the inverted square wave to drive the CMOS switches.

The circuit is a sample and hold circuit using CD4066 CMOS switches. The circuit is shown in Figure 1.

The detector is followed by an active low pass filter which helps with the signal to noise ratio. Dr Rohde makes the point that the product detector makes a significant contribution to the sound of the receiver. AGC limits the dynamic range but the performance of the product detector is still important.

IF Filter Switching

In the same QST article a high isolation switch for IF filters is shown. The switching elements are FETs

rather than diodes. The filters are 50 ohm input and output impedance and are 1.44 MHz crystal filters. Isolation of 90 dB is claimed. Higher frequency filters are much harder to make with stability and excellent shape factors and hence the 1.44 MHz frequency. Filters to take advantage of this degree of isolation are not cheap.

The circuit is shown in Figure 2.

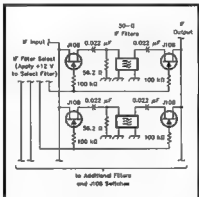


Figure 2 — JFET IF Filter Switch.

Advanced Receiver Design

The article by Dr Ulrich L Rohde KA2WEU/DJ2LR in Nov 1992 QST is required reading if you are interested in advanced receiver techniques. Also of interest are the article in Feb 1993 QST by Jacob Makhinson

N6NWP on A High Dynamic Range MF/HF Receiver Front End and the articles in Aug 1992 QST and Jan 1993 QST by Rick Campbell KK7B on Direct Conversion designs. For further reading Pat Hawker had some interesting items in Technical Topics In Rad Com Feb 1993.

An interesting technique is the use of DSP to takeover many of the receiver blocks now handled by analog circuits.

WIA News

Spectrum Auction

The US government plans to auction two large segments of the radio spectrum between 1.8 and 2.2 Gigahertz (GHz).

The scheme is apparently part of a plan to cut the government's budget deficit.

The auctions have been approved by a committee of the Congress, while companion plans are passing through the US Senate.

President Clinton approves the auctions scheme, which practically guarantees they will be passed, according to reports.

The auctions are forecast to return some seven billion dollars U.S. to the American government.

Australia tops 35th JOTA Participation

With 18.8% of Scouts in the country taking part in the 35th Jamboree of the Air last October, Australia scored the highest participation rate among the 32 countries who submitted reports to the World Organization of the Scout Movement.

The Netherlands were close behind, with 14.2% of their Scouts participating. However, 17.9% of the Guides in the Netherlands took part in last year's JOTA, while 9.9% of Australia's Guides participated.

A total of over 400,000 Scouts and Guides from around the world took part.

(- from the International JOTA Report for 1992, supplied by Peter Hughes VK6HU).

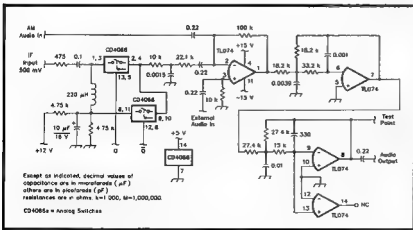


Figure 1 — CMOS Analog Switch Product detector.

The Story of Kingsley Radio Pty Ltd, 1938 to 1945 — Part 2

George W Neilson VK3TES * continues his story of the development of the AR7.

We won the contract and the first order for twenty receivers was started. The old premises at Spring Street quickly became too small as the size of the staff increased. We moved into a bigger factory in St Kilda Rd, opposite the Shrine and only one block away from RAAF Headquarters, our principal customer, who in turn were next to the Victoria Barracks, the headquarters of the Army and Navy. It is sad to realise that both the Spring Street and the St Kilda Road premises are now gone.

An early wartime story involved a young and very new digger in his brand new uniform striding purposefully from the city down St Kilda Road when he met an old first world war digger, back in uniform for a second time. He stopped him and asked:-

"Excuse me Dig, can you tell me which side is the Victoria Barracks on?"

The old chap thought for a moment then said:-

"I don't rightly know Son, but I think they're on ours!!"

With the rapid expansion of the factory and staff the boss put his secretary Mollie in charge of purchase and the store. Many materials became hard to get and Mollie had to work harder than she had ever worked before, chasing supplies. Mollie complained bitterly every time another kit of parts to make another receiver was drawn out of the store, the assembler being told how difficult it was to get these bits and how hard she had to work to get them!

Two staff acquisitions were genuine sheet metal workers, Les Eastwood and Ivan Harvey. Initially the testing of AR7s was carried out by John Bremner but later by Charles Mutton and eventually Jack Kling, two well known names in the Melbourne Radio Industry. The smooth running of the production was assisted greatly by the Aeronautical Inspection

Directorate inspector Ken Booie. Tom Heywood and his mate Laurie were the core of the wiring line. Tom eventually worked in the design lab as an assistant together with Laurie Buckingham, a genius who went on to have his own business making dress sequins and later tape recorder heads!

"I don't rightly know son, but I think they're on ours!!"

During the course of the war some 3200 "AR7" receivers were made for the Air Force, Army, Civil Aviation and Dutch Navy. The Army version was designated the "Aust Reception Set No 1". The receiver and its coils were fitted to a carrying case painted in Army khaki colour and the front panel was in brass with black background to ensure minimal reflections. The power supply was mounted in a separate carrying case also in khaki. The version for the Dutch Navy incorporated a front panel with all the controls identified in Dutch.

HK, who was intensely patriotic, decided that "we" should make our own personal contribution to the war effort. He called us all together and told us that the firm would donate the materials to make a receiver and we, the troops, would donate the time to make it. As it would not be convenient for everyone to work on the particular receiver it was agreed that we would work four hours overtime for free — as we worked two nights and Saturday morning each week. We worked our free night and as I was now foreman and last out it was my job to lock up. Next morning when I arrived to open up I found the front glass doors smashed. I found that during the night there had been a fire in the factory. One of the wiremen had thrown his dustcoat on to the bench over a soldering iron. A partition was

burnt but most of the damage was done by water. It somewhat took the edge off our patriotic gesture. But the Air Force did get the 1000th receiver complete with special plaque presented to them, compliments the Management and Staff of Kingsley Radio.

HK had a visit from an Army Major one day who told him that he was there in strict confidence. He was leaving the following Friday on a troop ship for the Middle East and wanted to take with him one of the Army versions of the receiver. It was impossible to get the necessary paperwork in time and he wanted the boss to supply it on trust with the paperwork turning up later. We worked every night and delivered on time. I do not know if we were paid. A couple of years later we saw this major again and asked him how the receiver performed. He gave us a funny look and told us it was left on the wharf!!

We were always getting visits from military officers with various problems. These led to all sorts of investigations and I doubt if we ever were paid for our work, usually

WIA News

Phone Scanners Banned in US

Radio scanners capable of receiving cellular telephone transmissions were banned from importation and sale in America last April by the US Federal Communications Commission (FCC).

Scanners covering US cellular radio telephone service bands of 824-849 MHz and 869-984 MHz are affected.

The ARRL attempted unsuccessfully to get specific wording that bona fide amateur equipment be exempted, but the FCC modified its rule covering converters so that it applies only to converters "designed or marketed for use with scanning receivers," according to the April ARRL Letter.

Converters covering the US 902-928 MHz amateur band are not affected.

including the building of prototype equipment, which often became redundant before the exercise was completed.

The Army had problems in the Western Desert with the Air Force not being able to identify friendly tanks, so many tanks were lost to our own aircraft. It was proposed that a special receiver would be fitted to the tanks, tuned to a special transmitter fitted to the planes. On seeing a tank the plane would transmit. If the signal was received by the tank the tank commander would release a puff of special coloured smoke as an identification, a unique form of "IFF". We had designed and built a prototype receiver and had it working when the project was scrubbed. Our liaison was with a Captain of the Tank Corps. On one occasion when he was visiting us he said that he was being picked up at noon. Just before the appointed hour he put overalls over his smart uniform and as we heard a great rumbling out in St Kilda Rd he proceeded to his pick-up — a Matilda Tank!

Suddenly we became aware that a machine shop was to be installed at Kingsley and we got a couple of lathes — small and large — and a shaping machine. Next we got stacks of drawings for what we were told was an "RDF" unit. We were not to know until much later but we had become involved in "Radar". The units which were made were purely mechanical, albeit UHF, being an "Aerial Switching Unit". We knew it as the "Dogbox" as the case was shaped like a kennel. Inside were two tunable co-axial cavities sequentially coupled to rotating capacitor plates motor driven with conventional automotive breaker points, cam driven, giving synchronizing signals. It was full of beautiful brass machining and screw adjustments.

Sometime in 1941 the Government notified us of a requirement to manufacture polystyrene in Australia. Again in hindsight I guess this was precipitated by the advent of "Radar" although at that time it was top secret. HK decided that we should get into the making of polystyrene and Noel Featherstone — an old friend of HK, at one time involved in the manufacture of resistors at

Continental Carbon — and George Bennett from Sydney, both industrial chemists, came to work for us. They set about designing a pilot chemical plant for that purpose. Before this project reached the testing stage Taubmans in Sydney went on-line and our project was dropped.

... we heard a great rumbling in St. Kilda Road. He proceeded to his pick-up, a Matilda Tank!

About the same time Kingsley was having some difficulty in getting adequate supplies of iron cores for the coils. A separate company called Metals Disintegration Pty Ltd was set up and work was started in developing a manufacturing process to make iron cores. The process consisted of taking iron oxide powder called Haematite and reducing it in a muffle furnace at 800 degrees C in the presence of hydrogen. This removed the oxygen leaving iron powder, which was then pounded in a ball mill and mixed with dissolved polystyrene as a binder. Dried and further milled it was compressed in hot dies in an eight ton pressure hydraulic press to make the cores. Unfortunately the ratio of iron to binder was low and while the cores were useable they were not very satisfactory.

The iron cores which were being used in the receivers were manufactured by a small company in Melbourne. They started to have difficulty in keeping up supply and I believe that Kingsley invested some money in the company. As things did not improve Kingsley took over the company with its process and some of its staff. It is interesting to compare this process with the previous one.

The raw material was iron powder. This was obtained from a firm grinding piston rings made of cast iron and was the detritus from the grinder, literally floor sweepings complete with cigarette butts etc. The raw material was sieved to get out most of the muck then put through a similar reduction process in a high temperature muffle furnace to remove the impurities. The trays of powder were placed in a sealed 25 cm steel tube through the centre of the

furnace, hydrogen was fed through a small tube at one end and out at the other end, where the remaining hydrogen was burnt. When all the oxygen present in the material had converted to water the colour of the flame changed indicating the process was complete.

The powder was milled and then put through one of those black-magic processes! The manufacturer had made a patent device called a "Rubbing Mill" based on a dough mixer. After milling, the powder was processed in this "Rubbing Mill" which rubbed off all the sharp corners of the particles. As the particles have to be insulated from one another by the binder this reduces the possibility of the corners piercing the binder. It was the most important part of the process. After this, the powder was mixed with Phenol Formaldehyde (a thermo setting resin), dried, milled and pressed in hot dies.

Now we had everything but the "Rubbing Mill" and the owner would not sell it to us. I wound up with the project of designing a "Rubbing Mill" — I was by now working in the design laboratory. It was obvious that the process consisted of rubbing the particles against themselves. The Rubbing Mill designed consisted of a cast iron cylinder with hemispherical ends in which were mounted bearings. Mounted on spindles at each end were propeller like paddles which were driven by chain drives at slow speed in opposite directions. A rectangular box extension on the top was for loading and unloading and was closed with a rectangular plunger with lever and heavy weight applying pressure to the powder.

In operation considerable heat was generated and the cast iron mill was surrounded with a water jacket for cooling. We had Eric Patching working for us, an industrial display artist who was expert in modelling in clay. Between us we designed the patent paddles. One arm of each was propeller-like for circulating the powder and the other arm paddle-like for rotating the powder to achieve the required rubbing action. The device proved completely successful.

(To be concluded.)

48 Garden Street Elsternwick Vic 3942

BT

Lord Howe Island — VK9LD

(18 Nov-24 Nov 1992)

Bill Horner VK4CRR describes his DXpedition to a Pacific Paradise.*

Way back in March of 1992 I first considered Lord Howe for a week-long operation. When the HIXA Melish Reef/Willis Island DXpedition was forced to cancel due to lack of financial support, I again renewed my interest in Lord Howe. With most of the logistics finalised I set out to get accommodation on Lord Howe. With plenty of vacancies available I figured it was just a formality of making the final booking and VK9LD would spend a week of DXing from this beautiful South Pacific island.

Organising accommodation proved to be the biggest problem for the whole operation. In three days, the travel and accommodation arrangements had to be changed three times, and in the end almost became a no-go. At this time Len Holbrook VK4DDK/VK4HV joined me in accommodation negotiations. On past occasions when DXers have gone to Lord Howe, it appears that the locals had some bad experiences with TVI etc, and don't hold amateurs in very high esteem! I must thank Janne Shead of Trader Nick's Lodge for doing everything possible to make our stay most enjoyable, and, more importantly, for agreeing to allow the use of amateur radio. Another major problem when going by small plane to these islands is luggage weight. Oxley Airlines permits 14 kg of luggage per person. With the barest of equipment, Len and I already had 32 kg. Special reservations with the airline were made, and we were permitted 50 kg of luggage.

With my Kenwood TS850S and PS50 etc, a borrowed Cushcraft R7 (VK2BEX-Atsu), my travel arrangements to Brisbane were finalised. My thanks to Kerry VK4MZ for his help in this department, and to Eric VK4NEF for providing me with overnight accommodation as well as my DoTC licence.

Bright and early next morning I met Len at the Brisbane Airport. Len had arrived from the Gold Coast. Before



Bill Horner VK9LD standing under one of the huge Norfolk Island pines.

long we had our gear stowed on the plane and were ready for take-off. We left Brisbane on a nine-seater plane

at 20.00 UTC and headed for Lord Howe with a 10-minute stopover at Coffs Harbour. Lord Howe is some 300 miles east of the mainland. We arrived on the island at 23.50 UTC, where our host Janne Shead met us. After a quick island tour, Janne took us to our new home for the six days.

It didn't take us long to settle in and install the equipment. The R7 vertical antenna was erected and mounted on a 4m wooden mast that Len borrowed from Trader Nick's. Soon the equipment was ready and I did a test transmission on all the bands.

The first lucky station to get in the log was VK4SS. AI was sitting on 18 MHz CW waiting for us to start. The propagation was very poor, and we really didn't get anything much into the log before 04.30 UTC on the 18th. That night the pileups continued for hours as the bands stayed open.

The next day Tony Blas VK9LA arrived to give Len assistance in getting the dipole up. This dipole was home-brewed and perfected by Len. It was trapped for 30/40 and 80m, and proved to be a very successful antenna. Tony (agile as a monkey) ever-so-casually climbed to the top of a huge Norfolk Island pine tree where he mounted one end of the dipole. This antenna was used as a sloper with one end at 10 metres, and the other at 50-odd metres. We really do thank Tony for his invaluable assistance in achieving the success we had on the low bands.

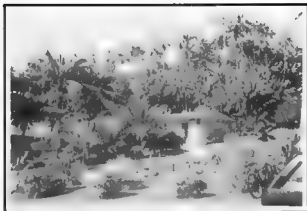
Over the next couple of days it became very clear that our original



Len Holbrook VK9LD with Norman Muriel VK4NH. Norman got his first licence way back in 1919. Today, at 86 years young, he is still active.



Looking south from the shack of VK9LD.



One of the many beautiful places on Lord Howe Island.

target of 10,000 QSOs was going to be impossible, and that around 4000 QSOs would be more realistic. On the low bands the QRN was for the most part S9 + 20, difficult on SSB, so 80/75m was somewhat a disaster. On 10, 12 and 15m working USA proved almost impossible. On the northern end of the island there is a range of mountains about 300 metres high only 500 metres from the shack. It could have been worse. At the southern end of the island there are two 900m high peaks. These lovely peaks are on the QSL card.

The WARC bands were a little disappointing with limited openings into Europe. Between the hours of 23.30 and 04.30 UTC the propagation was mostly non-existent, and so during this time Len and I found time to do a little exploring. The main transport on Lord Howe is pushbike. Len and I soon found out that we were rather unfit for riding around the island.

Lord Howe is a very laid-back peaceful place with only 400 people permitted at any one time. Some of the main attractions are feeding the fish, snorkeling, swimming, fishing, bushwalking and mountain climbing. Fishing from the shore is permitted in most parts, and deep-sea fishing is available. Snorkeling is very popular, particular at Ned's Beach, and at the quiet coral cays that surround the island. Ned's Beach is strictly controlled; fishing not permitted. Fish feeding is amazing to see or do. I had heard about fish feeding plenty of times, however, never had I imagined

seeing fish that were up to two feet long coming and eating out of your hand. The water literally boils with fish when the people start to feed them; the wild ducks endeavour to fight for a feed as well, and to see ducks eating bread and fighting off the fish for more is an incredible sight. One fish at Ned's Beach has been there for years. His name is Albert; he is about a metre long and incredibly beautiful.

Lord Howe Island has two resident hams, Dick Hoffman VK9LH and Tony Blas VK9LA. Both work seven days a week. Dick and his lovely wife Noelle have their own business called Sea Spray Art and Craft Studio. A visit to this is a must. Noelle has spent many long loving hours painting some of the beautiful sites and wildlife that are found here. To top all that off, they have many exquisite craft-styled items that will catch your eye. Tony works at the golf course, is involved with the National Parks and Wildlife Service and also is caretaker on a farm on Lord Howe. This leaves very little time for radio.

Another tourist and historical area is the Catalina crash site. In 1948, a Catalina seaplane tried to make an emergency landing. Unfortunately it clipped the top of the mountain at the northern end of the island. Today the wreckage is scattered over a wide area of some 800 square metres.

A blocked fuel line caused this disaster which claimed the lives of both crew members.

On 20 November 1992 we had a surprise visitor to our shack. He was given a temporary licence permit way

back in 1919. In 1920 he was granted an experimental licence, and in 1923 was allocated the callsign of 2BC. Today, at the very young age of 88 years, this gentleman is still active on the bands. I speak of VK4HH Norman Hurl. His stories were fascinating, and Len and I were honoured to have this pioneer in the shack of VK9LD.

QSO and DXCC breakdown for this operation are as follows:

Band (m)	QSO Total
10	158
12	228
15	1060
17	543
20	1581
30	262
40	824
75/80	140
160	5
SSB Total	2701
CW Total	2100
DXCC Total	110

Some DXCC rare ones worked were: FS, T32, ZL7, VK0, CN FR5, D2, A92, 9J2, JT and VK9N. A QSO with this operation is good for the HIDXA Awards program. The trip home was very scary as we had to fly all the way through electrical storms. The little plane was tossed around like a kite in a 20-knot breeze, and we were all glad to be back on the ground in Australia.

My special thanks to the following for their assistance: VK2BEX, VK4MZ, VK4NEF, VK4DDK, VK9LA, Oxley Airlines, Trader Nick's and HIDXA.

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BF

Opening a Packet of Worms

*Lou Destefano VK3AQZ * decided to try Packet Radio, and discovered a few unusual surprises.*

Around Christmas time every year, the family takes its annual holiday by the sea. This year, as I was lying on the beach enjoying the many wonders of nature, such as the well formed sea shells, the thought suddenly struck me that I should try Packet radio.

As it so happens, the local beach kiosk was selling, amongst the ice-creams and hotdogs, EA magazine. A quick flick through the January issue revealed just what I needed — a Packet modem design by Tom Moffat, and more importantly, it cost less than the armful of ice-cream and drinks I had been despatched to purchase by my beach frolicking family.

Thus I delivered all the eats and rushed down to the post office to send away for the kit. About an hour later it arrived (not quite, but it arrived very promptly anyway) and was so easy to assemble that it was ready to go in no time flat. All I had to do was wait for the holiday to be over after which we could head back home where my 386 computer lived. In the meantime, I lay on the beach admiring the lovely seashells, and thinking about all the Packet fun I was about to have!

On arriving home, all the fun started. I loaded up some software, and hooked it all up to the HF rig. I selected the area around 14100 kHz on 20m and tuned around carefully whilst watching the Graphic Packet screen. I tuned and I tuned and I tuned I tuned for a whole week and nothing happened! The thing must be a dud — no doubt about it! All I got was the sound-track from Blazing Saddles, as Tom had aptly described the sound of the Packet Racket — only something didn't smell right here. No wonder it was cheap, I thought! No — I am doing something wrong. Time to think about it. Then the thought struck me (like it did on the beach). I should do some reading up on Packet; you know — find out what it's all about.

After a bit of reading, the penny

suddenly dropped! I had been trying to use a 1200 Baud mode with 300 Baud HF signals. Now in hindsight, next to meteor scatter or moonbounce, HF Packet is the hardest thing to do in ham radio. Having the wrong modem certainly wasn't going to help matters much. Darn — I should have read some of the many articles and columns that are written on the subject. Why bother reading about something when you can have so much fun re-inventing the wheel!!

I had been trying to use a 1200 baud mode with 300 baud HF signals.

Anyway, it seemed that in order to make the thing work I needed to find a packet signal on 2m. So I set about looking for the appropriate signals. I am located 60km south of Melbourne at Devon Meadows which is at sea level, and sometimes seems to be in it, for part of the wet season. The number of 2m signals I can hear amount to about 2 a month. You could say I live in the Bermuda triangle of radio reception. I needed some advice so I asked an experienced packeteer at work, where should I look for packet signals.

He kindly gave me a couple of frequencies and some clues, and away I went. Now it so happens that I had in fact heard some strange signals on the packet frequencies, but I had always thought they were caused by the kid's computer — not packet signals. I connected up the modem, booted the software (which under the circumstance is an apt phrase), and almost instantly the screen burst into life and we were away. Voila!! The feeling was one of wonderment. I guess it must have been a similar feeling when the first radio experimenters, at the turn of the

century first heard the human voice sent over the ether.

Going from the clackety clack of the morse buzzer (early packet racket?) to hearing the complex undulations of the human voice, must have filled them with awe. Well the same thing hit me when the screen burst into life with the colourful display of dancing symbols and words. Man had gone from digital morse to voice and back to digital! I remained transfixed to the display for a couple of days and then decided it was time to take the next step — transmit! More fun started. Although the modem could successfully decode VK3RPS, I could not access it. Nor could I access VK3YZW, which was not even decodable. Anyway, where was RPS? It was in St. Albans nearly 90 km away and almost at sea level!! No wonder it was strength nothing. What about all the other repeaters — nothing!

Then Derek VK3CL sent out a beacon and with a good strong signal from Cranbourne only about 10 km away. His TNC was beckoning me to call it. So I did — bells rang and the message came back that I had connected! Now this was my first connection — and I was all alone.

A sudden blank feeling came over me. What do I do now? What do I say? I guess all packet operators must experience this feeling the first time they connect. Your mind just goes blank. I know — I will type "hello". The VK3CL unit was in fact in auto mode and Derek was not at the wheel. "Hello" is not a valid command, it replied. Type "help" or something.

Ah, now we were cooking!

After that success, and with some patient help from Derek, we started to figure out the basics. I still could not work VK3RPS, although I could digipeat via VK3CL. Not the same thing. I needed to do it for myself. I commenced by trying to improve the received signal. I carefully checked the alignment of my old rig which was a homebrew synthesized unit, but was unable to gain much. Then I added a GaAsfet preamp out of Silicon Chip by Garry Cratt using a 3SK121. A little tweak and bang! The signal from RPS shot up out of the noise up to strength 5 — great! Now

for the transmitter which was putting out 8 watts but should have been doing 25 watts or more (2N5581). A long time ago it had dropped in power and I thought the chip was gone. Might as well try and fix it. So I opened it up, prodded around the area of a rather dull solder joint and bang again — 30 watts!

I could now connect directly to RPS I answered all its questions (Derek had clued me in) and we now had a home BBS — 90km away! At this stage I could hear VK3YZW in Caulfield but could not really work it properly. Now it was time to tackle the antenna which was a Dick Smith Slim Jim bent at 45 degrees courtesy of a January wind storm. A beam was needed and so I assembled a 5 element vertical yagi and fixed it to the chimney. Yep both VK3RPS and VK3YZW came up 3 or so S points but I could still not work VK3YZW reliably.

I then put together a 45 watt amplifier using a 2N6084. A little better, but still not enough, and no gain on receive. I had a 10 element beam at mum's place — that would do it. I had a Hills telemast with a HF triband junior type beam on it. It was

only at 15 feet. I had put it up higher in the past but the wind kept breaking it. I had become sick of replacing the top section every time the wind exceeded 10km/h. So I left the top section mostly inside the middle section which was mostly inside the lower section — hence it was only 15 feet high. This was not exactly the right set-up for bursting up the pack in a DX pile up, nor was it much good for taking an additional 10 element 2m beam. It was time for a big step

— yes — the Nally tower! I guess all hams dream of owning a wind up, winch down Nally tower sometime in their life — a bit like owning a Ferrari.

So out with the "Trading Post" (1), and soon we were driving to some obscure country town with a 3 metre long trailer expecting to bring home two 8 metre lengths of lattice tower. Well, eventually we found the town and the house. The "house", had been described over the phone as the only new brick house in town — can't

WIA News

Spectrum Management Agency Startup

From 1st July, the management of the radiofrequency spectrum in Australia will be the responsibility of the Spectrum Management Agency (SMA), headquartered in the Benjamin Offices in the Canberra, ACT, suburb of Belconnen.

The SMA takes over roles previously the province of the Department of Transport and Communications, and will be responsible for the planning,

operational and regulatory functions "... required for the effective management of the radiofrequency spectrum."

Established as a separate Commonwealth agency within the Federal cabinet's Transport and Communications portfolio (held by Senator Bob Collins), the SMA's responsibilities include preparation of a spectrum plan and frequency band plans, licensing, pricing and regulation of spectrum usage.

SOME THINGS HAVE NO COMPARISON

amateur
radio
action

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miss it. Well, I did miss it! I misheard -it should have been "the only timber house next to a Nubrick house"! Anyway, after following the owner for 20 miles down a tractor track, we finally had the tower loaded and ready to head back. It was in fair condition, with only the top section having been used to hold up a rather awesome looking country TV antenna. A few extra pieces had been welded on, but otherwise it was okay and not too expensive. Anyway, having come all this way, I wasn't going home empty handed irrespective of whether it was good, bad or indifferent. So we all waved goodbye, good luck, and so on, and away we went.

The next town homewards was about 10km away. As we approached it I noticed, as I came over a hill, a police car at the bottom, in a side street at the edge of the town. Although the trailer was registered, etc, I was already pretty nervous about the extra length and this was certainly not going to help. Someone must have tipped them off. Maybe that's how they raise revenue — sell people towers, nab them on the way out, slap 'em in jail, and you're never seen again! No, couldn't be that. Anyway, I had a large pair of knickers tied to the end which you could see

for miles (yes they were mine!). So I continued down the hill very slowly so as not to stir things up. He held up the radar gun, but I guess at 1 km/hour I did not have a speed problem. And so I passed him without being stopped. I guess in the country they are used to people carrying long loads on trailers. Would you believe it, after surviving this, 10km further along the road, we came across the next town and the same thing again. A man sitting in a police car waiting for me — only this time he followed me after I passed him. Around the corner we went and bingo! We had become part of the town parade (probably a Potato festival or similar) travelling down the main street of Hicksville with an 8m tower at the rear for good measure. I yelled out of the car window that I was delivering it to the showgrounds for the firemen's exhibition, and fortunately they let me go past and outwards I went!

We arrived home 8 hours later, somewhat frazzled but okay. It sure was a nerve racking experience. If I had known what I was in for, before buying a second hand tower, I would have paid the extra, and let the experts do it. Anyway, 4 weeks later and the "little" you beaut, 2 section, 15 metre tower was up and loaded with the HF beam. This now left the

Hills mast free for the 10 element, 2m beam and thus able to go higher (with some nylon guy ropes). So finally after all this, up went the beam and we were now able to work VK3RPS quite well, and VK3YZW some of the time.

After the frustrating episode of trying to make the 1200 baud modem work on HF, I decided to build one which would. To this end I built a modem using a 7910 world chip which I can say is working quite well. (Watch for a description of this in a future issue.)

It's been 6 months since that fateful day on the beach and I can honestly say that the whole thing has been a barrel of fun. I have put up a new tower, resuscitated my old rig, loaded lots of strange software, with equally strange names (Yapp!!), and become a "packet pest" at work. Sometimes I reflect back — and wonder what made me do it!

The moral of this story is that you had better watch out for the packet bug. If it bites you, you could end up like me!

Reference (1). The "Trading Post" is a weekly newspaper devoted entirely to advertising used goods and equipment. It circulates throughout Melbourne, and most Victorian provincial centres.

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BT

WIA News

New WIA Members

The WIA bids a warm welcome to the following new members who were entered into the WIA Membership Register during the month of May 1993.

L20941 MR A G EDGE
L30549 MR S DODDS
L30850 MR R CARRASCO
L40349 MR R C DENHAM
L50301 MR Y T HUI
VK1FF MR J A MULLER
VK1NAP MR W J MCINTYRE
VK1NB MR N L BRAMWELL
VK2BOD MR M CARDOSO
VK2BSL MR B SAAVEDRA
VK2CBD MR B J DAWSON
VK2GXW MR J AMORIM
VK2JPR MR G F ENGLISH
VK2SMG MR M R GREEN

VK2STU MR S LAMB
VK2SUN MS S M BURKITT
VK2TCJ MR Y A SONG
VK2XVW MR N C FARLEY
VK2XXD MR P A RIGG
VK2YCS MR S S CLARK
VK3CBE MR B EVERETT
VK3CL MR D CLEGG
VK3EXW MR G CUMMING
VK3MGG MR G LAGOS
VK3MHX MR W HOLMES
VK3MRS MR R SMITH
VK3OT MR S R GREGORY
VK3TAS MR S BASZAK
VK3VAC MR A APRILE
VK4BM MR H F EDWARDS
VK4DGO QLD DIGITAL CLUB INC.
VK4KGO MR B R KNOWLES
VK4LGC MR G R COUTTS

VK4LY MR S J BLOXHAM
VK4TJB MR J R BRIGHT
VK4WIP IPSWICH & DIST RADIO CLUB
VK5AAM MR A A MARKS
VK5AI DR J F CASHEN
VK5AKJ MR R K JOHNSON
VK6BDP MR W M JOHNSON
VK6KCC MR A G GENOVESE
VK6YFI MR S G WILLIAMS
VK8FT MR F TURNHAM

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WIA News

Amateur Radio Publicity Dispels the Myths

A story on page 15 of the Sydney Morning Herald for Saturday May 15th should go a long way towards correcting public perceptions of radio amateurs as cranks who listen to crackly transmissions on shortwave between bouts of eavesdropping with scanners on salacious royal telephone calls.

The article explains how John Simon VK2XGJ was awaiting news of the launch of the latest (ill-fated) packet radio satellite, Arsene.

Written by Herald staff journalist, Richard Macey, the article was accompanied by a picture of John in his shack. A keyboard and computer monitor are in prominent view among the transceivers, but there's not a microphone in sight!

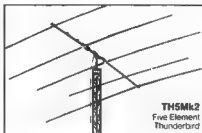
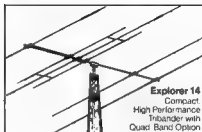
Macey clearly explained packet radio in laymen's terms, after telling readers that "amateur radio enthusiasts have come a long way since the days of huddling over crackling wireesses..."

"Arsene....will serve the growing band of hobbyists who specialise in 'data transfer'. Instead of speaking into microphones, they use radios to enable their home computers to speak to computers in other parts of the world.

"Mr Simon said that to use the relay in the sky, people needed two radios and two aerials — one set to receive messages and one to send, a computer, a device to link the computer to the radio and an amateur radio licence," Richard Macey wrote.

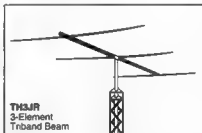
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break between
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Bill Magnusson VK3JT*

ARSENE

The new French amateur radio satellite ARSENE was successfully launched from Kourou French Guiana on Wed 12 May 1993. It has been inserted into its final high altitude elliptical orbit. Regular Keps are now being distributed as part of the NASA 2 liners on the packet radio networks. Unfortunately something seems to be amiss with the 2 metre down-link. The telemetry indicates that the transmitter is on and working so the implication is that either it has a problem with the connection to the antenna or it is way off frequency. Amateurs everywhere have been asked to look for a signal from its (maybe free-running) oscillator somewhere in or around the 2 metre band as the crystal may have been damaged during launch. The signal should be telemetry at a rather slow baud rate. According to Bernard F6BVP its basic data is 2048 Hz Manchester encoded PSK at 128 baud. Please report any such signal ASAP to Bernard F6BVP at F6BVP@FRPA.FRA.EU or to AMSAT-VK.

The mode "S" transponder was opened for users on Tuesday 01 June 1993 but so far I've heard no reports of contacts made or signals heard. The mode "S" transponder frequencies are, up-link 435.1 MHz +/- 8 kHz, down-link 2446.54 MHz +/- 8 kHz. The mode "S" beacon is on 2446.47 MHz.

More on Acronyms

Further to the "HERCULES" acronym in the May column, this one's even harder to believe. Looking through a summary of acronyms recently I came across the following, "TLA = Three Letter Acronym".... No further comment!

Clockwork

If you are running an auto-track system where exact timing is important or you just like things to work properly, you are very likely dissatisfied with the accuracy of your computer clock. Some aren't all that bad but many are woeful. You could go to the expense of a super accurate clock chip but there are simple, cheap alternatives. "CLOCKWORK" is one of a number of similar share-ware programs available on BBSs or around the traps. It's only shortcoming is that the documentation is all but incomprehensible. Pity, because it's quite simple to get going and very effective. It will keep your system clock accurate

NATIONAL CO-ORDINATOR
Graham Ratcliff VK5AGR
Packet: VK5AGR@VK5WI

AMSAT AUSTRALIA TIME
Control station VK5AGR
Bulletin normally commences at 1000z, or 0900z on Sunday evening depending on daylight saving and propagation. Check-ins commence 15 minutes prior to the bulletin.

Frequencies: (again depending on propagation conditions)
Primary 7.064 MHz. (Usually during summer).

Secondary 3.685 MHz. (Usually during winter).

Frequencies +/- 5 kHz for QRM.
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The newsletter is published monthly by Graham VK5AGR. Subscription is \$25 for Australia, \$30 for New Zealand and \$35 for other countries by AIR MAIL. It is payable to AMSAT Australia addressed as follows:

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Adelaide SA 5001

within 1 or 2 seconds all the time. If you have problems with it, I have a "simple" set of instructions to get it up and running. Send me a 360 floppy if you want a copy. If there's enough interest I'll publish it in the column.

Up-Dating Keps

I get quite a few queries regarding the procedure for up-dating Keplerian elements in various satellite tracking programs. Here are a few basic tips. Kep element sets are published in a number of ways:

1. In printed form in various publications.

No problems as you are compelled to type them into your program and you just need to be careful, specially with the "NASA 2 liners", although they can be decoded with care. AMSAT format is much better for those who type in the Keps.

2. In electronic form on packet BBSs and phone BBSs.

They appear in two formats, NASA 2 LINE and AMSAT format. Most computer programs require that the NASA format Keps be "stripped" of ALL extraneous headers, footers etc. and be presented to the program as a block of data, containing

the data and NOTHING else. You can do this operation using your favourite screen editor.

AMSAT format Keps have two advantages. They are human readable and they can be loaded into most programs that support auto-update without stripping anything off the file. Disadvantages. They usually appear on the BBSs as more than one file and have to be down-loaded separately and it is VERY important that they are actually in real AMSAT format. Some files have appeared recently with different order and different terms to define the elements. Most programs will reject these. For the above reasons it's probably best to stick with the NASA format Keps.

3. Satellite names.

Be very careful that the Keps you are loading in use the same titling protocol as the satellites already in your file. As an example you may have elements in your program for a satellite called "arsene". If you load in a new set for a satellite called "ARSENE" (in CAPITAL letters) your program will assume this is a different satellite and make a new entry. The only problem is that it may not be immediately apparent as the new entry will be placed in the first available space in the data bank and will very likely be satellite number 215 or something on the second or third page and you may never notice it. You'll be left wondering why the program didn't up-date the original satellite. It's a very good reason to stick to the one source of element data.

There's a nice piece of soft-ware around the traps called IT SORT. It allows Instanttrack users to manipulate the satellite file to add, delete or move around the entries in your satellite data base. This feature is something that was sadly lacking in the original program. I'll review this software next month.

New MIR Crew

On July 1st 1993 the current crew, Aleksandr Poleschuk R2MIR and Genady Manakov U9MIR will be joined by Vasily Zibliev R2MIR and Aleksandr Serebrov R4MIR. The current crew will depart for Earth on 22nd July 1993. They have been quite active both on packet and voice and have regularly made contact with school groups in a number of countries. I understand the new crew members are similarly interested in contacts with young people of school age and that at least one of them is engaged in educational activities at "Star City". It is very unusual for such a long period to elapse with both crews on board.

* 359 Williamstown Rd Yarraville VIC 3013
Packet: VK3JT@VK3BBS

How's DX?

Stephen Pall VK2PS*

With the changing seasons, propagation is changing also. I think we all agree, that propagation was not particularly good in May. As a matter of fact, there were a number of days when it was almost impossible to have a contact with the USA or Europe. The 20m band — the favourite of DXers — was dead on several days. Solar activity has been low around the 100 mark during the day. One should remember that the bottom of a solar cycle is usually reached when the solar flux number is in the vicinity of 60.

The May propagation pattern was just a taste how in the next few years the bands will behave. Open one day and completely closed the next. Greyline openings, sunrise and sunset times, the low bands and proper low band antennas will be the favourites of the DXers in the coming years.

Mellish Reef — VK9M

The Mellish Reef DXpedition is now in the preparation stage (see AR May '93 p36). Bill VK4CRR advises that the expedition will leave Bundaberg, Queensland, on 15 September on a bigger yacht. The "Nina Q-1" is a 63ft (19m) twin-masted schooner; it is faster and can accommodate eight operators and the three tons of equipment. The expeditioners will be at sea for about three and a half days and plan to start operations on 19 September. Also VK2BEX has also decided to join the group as an operator. Latest news is that due to shifting sands on the reef the dry patch is now about 250 feet long and about 120 feet wide (approx 77x37 metres), not much space for five stations, antennas, eight operators, tents, generators and all other equipment that is needed for such an undertaking. One only hopes the dry land will grow a little bigger in the coming months. Donations are still very much welcome and should be sent to VK4CRR Bill Horner, 25 Iron St, Gympie, Qld 4570, who is also the QSL manager for the group.

Sprately Islands — 1S

After many months of planning and rumours of impending start of activity, the expedition became a reality on 27 May. Three Finnish operators, among them Martti OH2BH, three US, one Japanese, one from Singapore and two from Malaysia made up the team which was active for six days on all bands and modes, especially during the WPX CW contest. Frequent identification of the

station, together with the QSL information, was welcomed by the big "dogpiles" who tried to contact the station using the call sign 9M0S. QSL to W4FRU (see AR April '93).

Eritrea — E35X

In the referendum held on 24-26 April, 99 per cent of the Eritrean population voted in favour of independence from Ethiopia. The formal declaration of independence was made on 24 May. It is expected that the DXAC and DXCC will accept operations from Eritrea in the near future either as a new country or as a reinstated one.

A Norwegian group of amateurs, LA6VM, LA9DL, LA7XX, LA1EE and JF1IST, was active from 31 May to 9 June 1993. Besides operating, the amateur group also held seminars on amateur radio, attended by engineers, technicians and students selected by the Telecommunication Authority of Eritrea.

It is planned to establish a club station with equipment donated to the former Bouvel Island expedition and with assistance from various US DX foundations. QSL to LA6ZH Ruth Tollefsen, PO Box 17, N-0617, Oslo, Norway.

It is rumoured that JH1AJT and EJ9ZB will return shortly to Eritrea for a second operation. In the past few years the following activities were heard from Eritrea: 9ER1TA and 9ER1TB (1992) 9F2CWA and 9E2A (1993).

Transcontinental Balloon Attempt

By the time you read this, the transcontinental balloon attempt by Dick Smith, adventurer, publisher and radio amateur VK2DIK has been either completed or abandoned. At the time of writing this, his opponent, Phil, had a successful lift-off in a bigger helium balloon and is travelling in a north-easterly direction. Dick one night earlier had aborted start. When filling his smaller balloon with helium the sudden wind change twisted the envelope of the balloon, and to stabilise it and prevent a major damage, it was necessary to let the helium escape. Later, repairs to the envelope, and unfavourable wind conditions, had put the attempt back by at least four days. Dick eventually will lift off from Carnarvon, Western Australia, and hopes to land on the east coast of Australia. The New South Wales Division of the Wireless Institute of Australia (VK2)

has been asked by Dick to assist with amateur radio communications, and yours truly had the task of organising the team of volunteer operators for a continuous 24-hour duty. Dick's former firm lent a FT1000 and an FT990 for the operation, whilst Dick took his trusty FT757 and a vertical wire dipole with him into the plastic gondola hanging under the balloon. A variety of frequencies was used to keep watch and to assist if necessary, which activity did not permit QSOs of the ordinary kind with the rest of the amateur fraternity. It was planned at a later stage of development, depending on a variety of circumstances, that a special event station may be activated with the call sign V12AUS to celebrate the attempt. QSLs with SASE and/or return postage to be sent to the QSL Manager, VK2WI.

(Stop Press: Dick landed successfully near Casino on 18 June. Ed.)

East Sumner Island — VK0TI

The planned Truant Island expedition had to change course due to a cyclone which came across the Gulf of Carpentaria from the direction of Papua-New Guinea. Four and a half metre waves tossed the 15m (50ft) fishing boat at will, like a small cork on the water. The wind was blowing at 30 knots. Plans were changed and the group landed on East

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Bremmer Island. To operate there officially, they had to obtain separate permission from the traditional Aboriginal land owners. An official government approval was given earlier. Landing on the island was difficult as there is no harbour, and they had to run the boat up on the beach in the surf. Two of the group landed with all the equipment on the first day, the three others came ashore three days later. The boat was standing by 200 metres offshore. Despite equipment failure, the group (see AR May 1993) under the leadership of Mal VK8LC (now VK8LC) had a successful operation — about 2000 contacts were made, mainly on 15 metres — including a few hours operation on the VK novice band, but the 20m band was also activated. Harry VK8CR will outline the adventures and tribulations of the group in a future longer article in AR, on an island where there were only five amateurs, no other humans, but quite a few crocodiles. The activity was officially registered with the IOTA Program (OC-185) and the island is located at 136 deg 52' East longitude and 12 deg 05' South latitude. QSL goes to PO Box VK8TI, Gove, NT 0881, Australia.

Future DX Activity

- Didier FD1NZO, Jean Michel F1ODK and Pascal FD1RZJ will be active from Lichtenstein HBO/... on 80, 40, 20, 15 and 10 metre bands from 17 July for seven days. QSL to FD1RZJ Pascal Sotty, Grand Champ, 71130 Chassy, France.
- 9Q5FR is active in Zaire. QSL to Richard McDonald, Box 42, Cyanguu, Rwanda, Africa
- 9G1SB was heard on 21335kHz at 1545 UTC in the USA. QSL to Sewell T Brewer, Box M144, Accra, Ghana.
- John PA3CXC can be heard from time to time from South Sudan as ST0/PA3CXC. QSL to home call after his return to Netherlands.
- There will be a DXpedition to the Andaman (VU4) and Laccadive (VU7) islands sometime in October
- Rumour has it that a "small speck of sand" island in the Pacific will be activated in the distant future.
- Cameron TJJD is active QSL to FIMOW
- Ascension Island will be activated by N6TJ who will sign ZD8X during June/July.
- It was reported early in May that the planned expedition by the VK6 group to the Houtman Abrolhos Island Group was abandoned at a short distance from the island.
- YW5LT will be active 15-18 July from Los Testigos Island (SA-059). QSL to W1AF.

- Eddie VK2KS plans to operate soon from Vietnam as XV2A or as 3W1C.
- A group of eight US amateurs will visit St Pierre and Miquelon Islands from 9-13 July, for the IARU contest. QSL to NU8Z.

Interesting QSOs and QSL Information

- 7T1CE-Francis-14195-SSB-0546-May. QSL to F6FQK Francis Kremer, 31 Rue Louis Pasteur, F-67490, Detwiller, France.
- ZA1JZ-14031-CW-0216-May. QSL to I2MQP Pietro Mario Ambrosi, Via A Stradella 13, I-20129, Milano, Italy.
- EA9PB-Frank-14228-SSB-0556-May. QSL to the Manager, Box 2190, Ceuta, Spain.
- T14CF-Carlos-3799-SSB-1048-May. QSL to T12CF Carlos M Fonseca Q, Box 4300, San Jose 1000, Costa Rica.
- J49GJ-14190-SSB-0531-May. QSL to SV1AFN Makis Katsouris, Artakis 127, GR-17124, Nea Smirni, Greece.
- JW1CIA-Egil-14214-SSB-1135-May. QSL to LA1CIA Egil Hansen, Svenskeberget 60, N-1670, Kraakeroy, Norway.
- 3C1TR-Ed-14228-SSB-0618-May. QSL to KBJP Joseph L Pontek Sr, PO Box 80262, Indianapolis, IN 46280, USA.
- T94CR-Mirza-14251-SSB-0510-May. QSL to SM5AOD Hakan Eriksson, Svanv 6, S-61162, Nykoping, Sweden.
- T93M-Dan-14196-SSB-0413-May. QSL to DL80BC Felix Riess, Postfach 1253, D-3007, Gehrdren 1, Germany.
- VQ9MW-Brad-21205-SSB-0516-May. QSL to KD4RDQ Carey B Hammon, 805 Wooddale Ter, Macon, GA 31210, USA.
- TR8JH-Jean Michelle-14250-SSB-0550-May. QSL to W3HCW Carl F McDaniel, 2116 Reed St, Williamsport, PA 17701, USA.

From Here and There and Everywhere

- 17 May was "International Communication Day", better known as ITU Day. The International Telecommunication Union regulates the electromagnetic spectrum and, among others, the amateur radio frequency band allocations. The forerunner of the ITU was the International Telegraph Convention which was founded in Paris in 1865. In 1947 the ITU became a specialised agency of the United Nations with headquarters in Geneva, Switzerland. The VK2 Division of the WIA operated the special event station AX2ITU for 24 hours on that day. QSL with SASE to VK2WI.

- When sending reply envelopes to European stations and/or QSL managers in Europe, try to send the standard 115mm x 163mm European size (shades of Union Europe) In some European countries the postage will cost more if the envelope size is smaller. Strange, but true.
- The correct prefix for Yemen is now 4W instead of the 70 which was used before.
- San Marino, the tiny land-locked republic on the Italian mainland, was accepted into the Council of Europe. This gave the occasion for the special event station 7T1CE to be on the air from 6-10 May.
- As from 1 May there is a new prefix for Bosnia-Herzegovina. T90xxx for the National Soviet and visitors, T91xxx clubs, T94xxx (old 4N4 callsigns), T95xxx C-class operators, novices on all bands.
- The FR/G/DJ6SI operation from Glorioso Island is still not acceptable for DXCC credit; further documentation is needed.
- The address of the Ukrainian National UARL QSL Bureau is PO Box 58, 2520001, Kiev, Ukraine.
- The "famous" Box 88 QSL Bureau in Moscow is still working, but on the "user pay" principle. Have you noticed that the avalanche of Russian and other CIS SWL cards has stopped?
- According to the OPDX/BARF 80 DX News Bulletin, the only legal active stations in Western Sahara (S0) are as follows: S0RASD Club Station, S01A (op Naama Zeine Edinne), S01B (op Azman Mohammad) and S01MZ (op Manfud Zein).
- Look out for a new Tuvalu local operator; Juan T20JC has been heard on 14247. QSL Manager is KL7H.
- If you worked VR8B on CW on 14MHz, do not QSL. "Yvonne" was a pirate and had very strong signals on the east coast of Australia.
- Jack T30JH is very active on 18MHz. He worked 47 prefixes on SSB in four days. He is also planning to be active on 30 metres SSB in the future.
- A special event station was activated on Peru's highest mountain with the callsign 4T7HP on 24 June. QSL to OA4WM and/or OA4ED.
- What do they know, what we do not know? BT2000BJ was a special Olympic station working the US on 23 May, and gave its QSL manager as BY1QH, which is the amateur radio station of the Tsingua University of China in Beijing.
- Marion Island Z28M is active and was heard working VKs on the ANZA,

21205kHz net. The operator is Christie, and the home call is ZS1CDK.

- Warwick VK4AP, who operated for a few days from Canton Island as T31AP in August 1992 (see AR Oct '92) sent me a belated QSL card and a few notes. His short trip was not a DXpedition, it involved an engineering project and the radio just happened to be along for the ride. Warwick is not a DXer, but was happy to assist a few needing Canton Island. "Sorry the card is late," says Warwick, "but I have been away a lot."
- According to a news item in Sydney's "Daily Telegraph Mirror" quoting a London source, bags full of letters sent to Russia from abroad at the end of April or beginning of May have been dumped in a lake near Moscow's international airport. Was your QSL card with IRCs or green stamp among those letters?

- Various sources, including a Russian newspaper, reported the new callsign structure for the CIS (formerly Soviet Union) republics. Some of these callsigns have already appeared on air, others still use the old prefixes and there is no indication when all these changes will be implemented. Here is the information, for what is worth: Armenia = EK, Azerbaydjan = 4J; Belarus = EU, EV, EW; Georgia = 4L; Kazakhstan = UN, UO, UP, UQ; Kyrgyzstan = EX; Moldova = ER; Russia = UA to UI, 4K; Tadzhikistan EY; Turkmeniya = EZ; Ukraine = UR to UZ, EM to EO; and Uzbekistan = (not yet confirmed) UT to UM.
- 4U1VIC — the Vienna International Amateur Radio Club callsign, will be activated by WB4FNH from 13 June to 28 July. QSL to home call.
- Steve Salmon AA6LF has sold his house and bought a yacht in which he

proposes to sail around the world during the next seven years. He wants to visit 46 DX countries and islands starting with Mexico in November 1993, and finishing on Galapagos Island in April 2000.

- Phil FD1DHW has returned to France after a successful stay in Djibuti. He operated as J28BS and made about 2400 CW contacts, with an additional 100 SSB QSOs.
- The Canadian special call X07G was celebrating the 1993 Friendship games until 30 June. QSL to FARs Victoria, c/o Camosun College, Box 128, 3100 Foul Bay Road, Victoria, BC, V8P 5J2 Canada.

QSLs Received

5R8DG (7W MGR F6FNU) — TZ6NU (7W MGR F6FNU) — T31AP (6M OP VK4AP) — J28BS (6W OP FD1DHW) — S59KAB (4W OP) — S21B (3M MGR 2RFRU) — S21ZG (3M MGR W4FRU) — ZG3RW (10D OP ZLIAMO) — A22EX (2W MGR N4CID).

Thank You

Thanks to all of you who kept me informed and assisted me in compiling these notes, especially: VK2AFE, VK2DID, VK2DIK, VK2KFU, VK3TL, VK3YXK, VK4AP, VK4CPA, VK4CRR, VK4DA, VK6LC, FD1NZO, J28BS, HL9HH, T30JH; and the following publications: QRZ DX, The DX Bulletin and the DX News Sheet.

Good DX and 73

* PO Box 93 DURAL NSW 2158

ar

WIA News

Standards Action

Four committees to prepare standards on radiocommunications equipment are being established by the national standards body, Standards Australia, under new arrangements with the Department of Transport and Communications.

General radiocommunications equipment standards will be looked at by the committee dubbed RC/1; RC/2 will look at standards in the field of satellite and telecommunications networks, RC/3 will cover low power radiocommunications equipment, and RC/4 will cover maritime and safety of life equipment.

The committees will be making recommendations on the legislative application of the standards they prepare, according to a report in the May Newsletter of the Australian Electrical and Electronic Manufacturers' Association (AEEMA).

Meanwhile, the standards authority for Europe — the European Electrotechnical Commission (EEC) — has set a date of 1st January 1996 for stringent new maximum emission requirements to apply to electromagnetic interference (EMI)

from electrical and electronic products manufactured or sold in Europe.

Here, Standards Australia had made no decision as of June on the question of EMI requirements for such products and the Federal government's Department of Industry Technology and Regional Development (DITRD) "...has yet to formulate a position," according to AEEMA's Newsletter for June.

"There is a risk that if the matter is allowed to 'drift', an unreasonable timetable for compliance with requirements similar to that imposed by the EEC might be introduced if Australia adopts the same introduction date.

"Alternatively, if Australia is out of step with the EEC process the Australian market could become the 'dumping ground' for products that no longer comply with the European requirements," says AEEMA's Newsletter item.

AEEMA's Board believes that Australia should adopt the same date for EMI compliance for electrical and electronic products manufactured or sold here — that is, 1st January 1996. They are to take up the matter with DITRD and other relevant government departments.

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Now's the time to get ready for the summer DX season on the 6m and 10m bands, and the Yaesu FT-650 mobile transceiver allows you to do it in style. Its all-mode operation 100W RF output (SSB, FM, CW) and continuous 24.5 to 56MHz receiver coverage allows you to hear signals outside the Amateur bands, so you can track the rising MUF and work stations as soon as the band opens. The use of 3 DDS's and a 2 stage low noise RF pre-amp results in a very quiet and sensitive receiver (SSB, CW 0.125uV) so you'll hear weak signals much more easily. To cater for the FM enthusiast, the FT-650 provides repeater offsets, an FM narrow mode as well as exceptional 0.16uV (12dB SINAD) sensitivity. Other features include selectable tuning steps, manual/auto IF notch filter, RF speech processor, IF shift control, 105 scannable memories and an effective noise blanker. Includes MH-1 hand microphone. Cat D-3250



FT-990 DC Version

(Requires 13.8V)
Cat D-3255

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2 Year Warranty FT-990 H.F. All-Mode Base Transceiver



The FT-990 offers many of the advanced features of the legendary FT-1000, yet in a more compact and economical base-station package. Its excellent front panel layout, together with clear labelling, a large back-lit meter and an uncluttered digital display provides very straightforward operation. The receiver performance is excellent, with a wide dynamic range front-end circuit and two DDS's providing a very low noise level and excellent sensitivity over the 100kHz to 30MHz range. Transmitter output is 100W on all HF Amateur bands (SSB, CW, FM), with high duty cycle transmission allowed. An internal auto antenna tuner with 39 memories is a standard feature while the customizable RF speech processor and Switched Capacitance Audio filtering facilities are unique to the FT-990. Other features include IF Shift and IF Notch, IF bandwidth selection, an effective adjustable notch filter, 90 memories and one-touch band selection. Microphone optional extra.

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Cat D 4830

Quality Japanese antennas at a bargain price. Don't miss out on these great specials, exclusive to Dick Smith Electronics!

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Compact GST-1 2m/70cm Antenna

Frequency 144-148MHz, 430-450MHz
Gain 6dB on 2m, 8dB on 70cm
Length 2.5m
Type 2 x 5/8 wave (2m)
4 x 5/8 wave (70cm)

\$179 SAVE \$20

Long Range GST-3 2m/70cm Antenna

Frequency 144-148MHz, 430-440MHz
Gain 7.9dB on 2m, 11.7dB on 70cm
Length 4.4m
Type 3 x 5/8 wave (2m)
7 x 5/8 wave (70cm)

Cat D 4835 **\$269 SAVE \$10**

SO-239 Base/Lead Set

A convenient way to mount a PL 259 type antenna. This quality Japanese SO 239 base is pre-wired with 4m of low loss coax cable and has a PL259 already fitted for connection to your transceiver.

Cat D 4052

\$24.95 SAVE \$5



2m/70cm Magnetic Mobile

The black TM 723M is a slimline, compact dualband mobile antenna that's supplied with a low profile magnetic mount and low loss coax cable making it ideal for city drivers who can't use a long antenna. While only 0.7m high, it provides 1.7dB gain on 2m and 4.7dB gain on 70cm and has a conservative maximum power rating of 50W.

Cat D 4812

\$69.95

SAVE \$20

2m/70cm Mobile Antenna

The ST-7500 is a high-quality medium sized dual band antenna that uses a ground-independent design and a tiltable stainless steel whip structure to provide excellent mobile results. It's just 1m long, yet provides approximately 3dB gain on 2m and 5.5dB gain on 70cm with a maximum power rating of 150 watts. Requires an SO-239 antenna base or SO-239 magnetic base.

Cat D 4810

\$69.95

SAVE \$10

2m/70cm Hi-Gain Mobile

The ST-7800 is our best long-range, dualband mobile antenna, providing high gain (4.5dB on 2m and 7.2dB on 70cm), while only 1.5m in length. It incorporates an inbuilt tilt-over mechanism and has a maximum power rating of 150 watts. The ground-independent design also allows the use of gutter or boot/fender brackets for easier mounting. Requires an SO-239 antenna base.

Cat D 4815

\$119.95

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SO-239 Magnetic Antenna Mount

A powerful Japanese magnetic mount for use with PL 259 antennas. It's supplied with 4m of quality coax cable and fitted PL 259 plug. Suits small to medium VHF/UHF antennas such as the ST-7500.

Cat D 4520

\$59.95



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EX-DEMO CLEARANCE! YAESU FT-1000



**SAVE
\$500**

Now's your chance to get the 'Best of the Best' at a bargain price! Right now you can pick up an ex-demo FT-1000 deluxe HF all-mode transceiver and save \$500. Here's what the experts have to say about this incredible transceiver...

On Operation

"The layout of the front panel of the FT-1000 is just right. I reckon the FT-1000 is (operationally) far less complex than either the Icom IC-781 or the Kenwood TS-950S." -ARA
"I found the FT-1000 easier to learn and use than any other radio in its class." -QST

On Documentation

"clearly written and complete, and includes a complete set of schematics and many high quality photos." -QST
"The quality of printing and presentation of this book is the best I have seen." -AR

On the Receiver

"this rig has a very strong receiver. It has the best overall performance (in terms of sensitivity and dynamic range) and the highest third order input intercept of any commercial radio ever tested in the ARRL lab." -QST
"The direct digital synthesizer works very well and produces receiver performance that sets new standards." -AR
"I found the receiver in the FT-1000 to be astonishingly sensitive and immune to cross modulation." -ARA

Transmitter - SSB

"the FT-1000 is easy to adjust and use. The processor adds quite a bit of punch to SSB signals, hams I worked on SSB with the FT-1000 gave me good audio quality reports." -QST
"Reports were all very favourable, especially when using the speech processor." -AR

Transmitter - CW

"CW keying was a delight. power output was checked in the CW mode and found to be well in excess of 200 watts on all bands." -AR
"On CW the FT-1000 was absolutely faultless." -ARA
"CW operation with the internal keyer is a breeze." -QST

Transmitter - RTTY/Packet

"Using the set on HF packet was an absolute pleasure." -PW
"Packet and RTTY modes were tried and proved just superb." -ARA

Conclusion

"the FT-1000 represents unbelievable value." -AR
"It's an excellent set worthy of accolades and rave." -ARA
"the FT-1000 needs little for me to consider it the ultimate contesting and DXing machine available today." -QST

The FT-1000's combination of Direct Digital Synthesis, high output power, ultra-high performance receiver and easy to use controls put it far ahead of the competition. Hurry in today and check out our limited number of ex-demo models all with a full 2 year warranty. Wouldn't you rather be using the "Best of the Best"?

Cat D-3200

2 Year Warranty

\$5495

(ex-demo models only) includes MD-1 desk mic

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STOCKS!**

Magazine Reviews

ARA - Amateur Radio Action Vol 13, No 2
AR - Amateur Radio August 1990
PW - Practical Wireless January 1990
QST - ARRL QST March 1991 (review with optional filters fitted)
Copies of our 12 page colour brochure are available upon request. Phone (008) 226610 or (02) 8882105

Some models may be shop soiled. However all come with a full 2 year warranty

* Ex-demo units are available at these stores: Please phone to check availability. York St (02) 267 9111, Nth Ryde (02) 878 3855, Chermide (07) 359 6255, Brisbane City (07) 229 9377, Coburg (03) 383 4455, Bourke St (03) 639 0396, Adelaide (08) 232 1200, Perth City (09) 328 6944

A Packet of Packet

Warren Toomey VK1XWT

As you can see by the change in call sign above, Kevin Olds VK1OK has passed the packet column to me; he has taken over the WIA Federal Presidency after the sad loss of Ron Henderson VK1RH.

Therefore, this month's column is a fill-in until I can get my act together. This column is intended to present ideas and topics sent in by the packet community, so if you have an idea for a column, or indeed a whole column, please send it in to me at my QTH or to the addresses below. I'm also happy to field questions about the topics in the column.

Warren VK1XWT
VK1XWT@VK1KCM.ACT.AUS.OC
vk1xwt@minnie.vk1xwt.ampr.org

This month's topic is, what is a network, and what makes it so?

What's a Network?

People often talk about the "Amateur Packet Network", but do they mean AX.25, NETROM, ROSE, TCP/IP, the BBSs, or a combination of these? In this column I want to describe what a network is, and show in what ways our packet systems fit the description.

Loosely speaking, a network is a collection of computers that can exchange data directly or indirectly via one or more link layers. A link layer is a method of passing information directly between two single computers. This includes AX.25 and Ethernet, and in fact the formal specification of AX.25 describes it as "a link layer for amateur radio".

A network differs from a link layer in that with a network data can pass over several different links to get from one machine to another; data only traverses a single link in a link layer.

AX.25

AX.25 doesn't form a network. It only provides the means by which data can be reliably exchanged between two computers, via a connection. The main shortcomings of AX.25 are that the person opening the connection must know a route (ie a chain of digipeaters) to the destination machine, and this route can't be more than 8 digipeaters long. This prevents an AX.25 machine from exchanging data with all other AX.25 computers.

This is not to say that AX.25 is useless. In fact, AX.25 is great for local QSOs, or for connecting to the nearby BBS. Most importantly, it can be used as the link layer for a real network.

The BBS Network

The world-wide system of amateur bulletin boards does form a true network, because data (in the form of personal mail or bulletins) can be exchanged between any two computers in the network. It just might take a while! When dealing with a network, two things that are of interest are the addresses used by the network, and how the machines route data over the network.

Bulletin boards are known by their hierarchical names, which indicates the basic geographical location of the BBS. For example, the main BBS in Canberra is VK1KCM.ACT.AUS.OC, which says that VK1KCM's BBS is in the ACT in Australia, which is in the Oceania region. Why are hierarchical names needed? There are two reasons: the link layer used and the method of routing.

"The bulletin boards use a pass the buck method of routing mail."

BBSs typically use AX.25, AMTOR, FACTOR and satellites to pass on bulletins and mail. They could also use modems over leased lines or the telephone system, although this would be illegal according to the amateur regulations. There is no guarantee that the types of addresses on each of these link layers are going to be the same.

To resolve this possible problem, the BBSs use a common name format, and map their hierarchical names to the addresses on the link layer. This ensures mail and bulletins can be forwarded regardless of the types of addresses used on the link layers.

The second reason for the hierarchical names is that they make routing the mail easier. The bulletin boards use a "pass the buck" method of routing mail. If I can send the mail direct to the destination then do so, otherwise, forward it to someone else who will have a better chance. The hierarchical names permit forwarding on a geographic basis. For example, given some mail for VK1XWT@VK1KCM.ACT.AUS.OC, a bulletin board forwards the mail as follows:

- If I can send the mail to VK1KCM, then I'll do that.

- Otherwise, if I can send the mail to another BBS who knows how to get mail to the ACT, then I'll do that
- Otherwise, if I can send the mail to another BBS who knows how to get mail to Australia (AUS), then I'll do that
- Otherwise, if I can send the mail to another BBS who knows how to get mail to Oceania (OC), then I'll do that.
- Give up!

The method used to forward the mail and bulletins is irrelevant, as long as they eventually reach their destination. This is what makes the Bulletin Board system a network.

NETROM

NETROM nearly forms a network. It has the characteristics of a network; different computer addresses than those used on the link layer and forwarding of data (packets here, not bulletins). However, NETROM can't get data from every NETROM node in the world to every other. The reason for this is NETROM's routing method.

Instead of using a hierarchical naming scheme to route data as with the bulletin boards, each NETROM node keeps a routing table which holds routing entries for many destination NETROM nodes. Each entry contains the destination node's NETROM address, and the next NETROM node to forward packets for the destination. Again, a "pass the buck" method of data forwarding is used.

Because NETROM doesn't use a hierarchical method of routing, each NETROM node must learn routes to other nodes. This is done by regularly broadcasting the node's routing table, and receiving other nodes' broadcasts. Broadcasting allows node names and routing information to pass around the network (like bulletins), allowing nodes to discover routes to very distant destinations.

What prevents NETROM from forming a true network is the limit on the routing table size in each NETROM node, on the order of 100 entries. This limit prevents a NETROM node from learning routes to all but the nearest 100 destination nodes, effectively limiting the size of the NETROM network.

NETROM has another shortcoming, in the area of services for the user, it only provides a reliable connection, like AX.25. This usually isn't a problem if you only want QSOs, but limits the applications that can be provided by the network.

TCP/IP

TCP/IP does form a true network. It can use many different forms of link layer (AX.25, Ethernet, SLIP and fibre-optic

FDDI for example), and can route data, in the form of packets, between any two TCP/IP machines.

Because TCP/IP runs on link layers with different addresses, it uses its own network addresses. These take the form of 4 bytes, usually written as four decimal number separated by dots, e.g. 44.136.7.129. To make life easier for us humans, TCP/IP systems usually allow textual names (like *minnie.vk1xwt.amprc.org*) which the system maps to the 4 byte address.

TCP/IP routing is a sort of cross between the methods used by BBSs and in NETROM. Each TCP/IP node has a routing table, but instead of having routes to individual machines, the table holds routes to groups of machines. A group usually has 2 or 3 bytes of TCP/IP address common. For example, 44.136.3.XXX hold the addresses of the 1200 baud TCP/IP computers in the ACT, and 44.136.XXX.XXX holds the addresses of all the TCP/IP computers in Australia. This is analogous to XXX.ACT.AUS.OC and XXX.AUS.OC in the bulletin board system. Because TCP/IP routes using groups, a node's routing table can be kept to a reasonable size.

Another advantage of TCP/IP is that, instead of providing a single connection, TCP/IP allows any number of connections to/from a TCP/IP node. An incoming connection is directed to a port, with different ports providing different services. For example, to open a standard QSO with a TCP/IP node you would connect to port 87. To connect to the node's BBS you would connect to port 23, and to transfer a file to/from the node you would connect to port 21. And TCP/IP allows you to have multiple connections to/from your node simultaneously.

The idea of ports has allowed several standard applications to be added to TCP/IP. File transfers, mail exchange, bulletin boards and DX clusters are just some of the applications that are available with TCP/IP. And because all of these can be used at the same time, you can be getting a copy of the latest PKZIP from one destination while you chat away to your friend on another destination.

Conclusion

The amateur service has three main networks: the bulletin board system, and the NETROM and TCP/IP networks. Each allows the exchange of data between nodes on the network, over different link layers.

Currently, the BBS system and NETROM are the most popular of the three, because you can use the networks

with just a TNC and a terminal (as long as there is a BBS or NETROM node near you). TCP/IP, although not as popular, provides a wealth of services that the other two don't. However, the statement that you need a fast PC and special software to get into the TCP/IP network is a fallacy; all amateur TCP/IP nodes allows AX.25ers to connect in and use the TCP/IP services, just like the NETROM nodes.

Each of these three networks fills a need in the amateur community, and as each gives different services to their users, I can safely say that all three will be with us for a long time to come.

PS: I did not discuss ROSE, as I do not know enough about it to describe it competently. I'd love to hear from someone who does.

* 99 Brigalow Street Lynnham ACT 2602

BT

WIA News

Successful Membership Campaign

The NSW Division achieved significant success with a membership recruitment and retention campaign conducted between December 1 last year and February 28 this year. These three months are when the greatest percentage of member renewals are due, and the campaign was timed to coincide.

Two Kenwood transceivers were offered as prizes in a draw for all members who renewed and for new members who joined during the period. Those members who had three-year memberships covering the period were also included.

Before the campaign commenced, Kenwood Electronics Australia was approached by a Divisional Councillor to sponsor the campaign. The company generously provided two transceivers; a TH-28A two-metre handheld (recently released here), as a second prize, and a TM-732A dual-band two-metre/70 cm mobile rig as a first prize. Total value of the prizes was almost \$1800.

In addition, Kenwood supplied 100 DXCC world map "place mats" which were sent out to new members who joined during the campaign.

The prizes were drawn by Joshua Mui of Kenwood at the Division's annual general meeting on Sunday 9th May.

First prize went to John Wilmott VK2AJX, from Bowral (a country member), while second prize went to Noel Black VK2TNB, of

Blakehurst and a member of the St George Amateur Radio Society.

The winners were presented with their prizes by Kenwood's Gilbert Kwok VK2GKT at a short ceremony before the St George ARS meeting held on June 2nd, which was organised by NSW Divisional Vice President, John Robinson VK2XY.

The membership campaign was heavily promoted via the Division's Sunday broadcasts, via the VK2 Notes in A.R., a prominent notice at the Division's headquarters in Parramatta, and at the Central Coast AR Club's Field Day held at Wyong on Sunday the 28th of February — the last day, when 10 new members were recruited!

The Federal Membership Statistics performance report shows that significant positive growth in membership occurred, with eight members above projected membership being reported for January, 90 for February, and 132 for March. (many new members recruited in February could not be added to the membership register by the Federal Office until March, after processing by the Division, hence the lag).

The NSW Division membership stood at 1714 members as at the end of March, giving it the highest membership of all Divisions, just seven ahead of Victoria. The NSW Division had good cause to sincerely thank Kenwood Electronics Australia at their AGM for their generous support!

EMC Report

Hans Ruckert VK2AQU*

1) QST April 1993 Car Airbags and Amateur Radio

The title, Don't Get Blown Away by Your Mobile Rig! This is not an April Fool joke. Federal US law also mandates passenger-side airbags in all new cars by 1998. When installing amateur radio mobile equipment in a car, one has to make sure the airbag is not hindered by equipment. When inflated, airbags generally fill the space from driver's and passenger's lap to the roof of the car. Manufacturers like Chrysler and General Motors have issued guidelines for the installation and use of added-on equipment. The circuit components which trigger the deployment of airbags must be so designed that RF from the mobile transmitter will not trigger the airbag's deployment.

2) EMCU (U stands for Umwelt = Environment in German)

Experts and scientists from various faculties of universities attended the Euroform Conference at Bad-Homburg (Bad = Bath, resort). News media reports

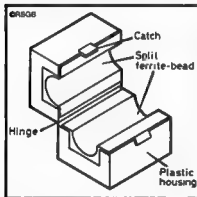


Figure 1 — Computer data line from Maplin

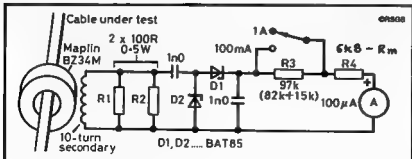


Figure 2 — This simple but effective RF ammeter is suitable for HF use.

brought sensational reports about RF radiation and human health. Fantastic, and apparently inverted, claims were published to alarm the public, and to sell papers and TV time. It had therefore become necessary to determine whether beliefs were facts or only unfounded fantastic assumptions. For example: Do radio waves cause cancer? Is the health of people affected if they live near telecommunication towers, including those of radio amateurs?

3) Personal experience of some radio amateurs:

I was for seven years in charge of the electronic lab of the Rosenthal Co at Selb, Northern Bavaria, prior to emigration to Sydney in June 1951. The rooms of this lab were attached to the high voltage laboratory, a concrete cube-like building of 25m per side. Two of my 41m-long wire antennas were attached to top corners of the building. The other ends were attached to the window of our lab on the second floor. The high voltage lab had the following testing facilities: A 2.3-million-volt pulse generator, charging capacitors in parallel with about 100,000v and discharging in series, with a mighty flash and bang! A 1.2-million-volt step-up transformer with separate AC generator of about 2000v, and a motor to select the voltage. The whole building shook when 4m-long arcs were generated. With salt-water spray the arc was even longer. Internal balconies were at various levels for observers and for the remote control of the generators and insulators under test. It was in the true sense of the word "a hair-raising experience", because under dry-weather conditions the hair of the observers stood straight up!

None of the technicians and engineers operating this equipment, nor we, the 12-15 persons in the electronic lab next

door, nor the families of the company directors living 50-100m away (DL6NH was the son of our director) suffered any ill effects. I have no medical problems, being 80 next year. Also, the Dr Ing who was in charge of the tests is still around and well. He is 84.

The 1m-long 100,000v rod insulators displayed corona discharge and RFI in the vicinity at even only 6000v applied. The metal caps had to be ground smooth along the casting seam. In another test field building nearby, all day long hundreds of dish-like insulators (for insulator chains) were breakdown tested at about 100,000v inside a safety wire cage, causing plenty of arcing, because a spark gap ring was used to find quickly any broken-down insulator. This caused more high voltage radiation (and RFI to radio reception).

Prof Dr Ing Geiger (of Geiger counter fame) did not mind standing on an insulating stool and demonstrating the radiation of a Van der Graf generator operating at 1,000,000 volts at the Technical University of Berlin Charlottenburg in 1939. His whole person was illuminated by the radiation. We may not like high voltage power lines above or near our houses because they cause severe interference to radio, shortwave and TV reception, but there are many popular human activities which are well known to be unhealthy, which should be blamed first, if our health is affected by some condition.

4) EMC: Radio Communication (submitted by Norm Burton)

August 1991: Teleswitch

The switch interferes with all reception over the 0.15-30 MHz range, especially amateur radio operation, using only μV signals, which often is disturbed. Therefore present EMC standards are only partly adequate. The EMC Committee is concerned that amateur radio communication will be affected when electronic power meters are used to measure electric power consumption. The susceptibility of certain PIR alarm systems was greatly reduced by fitting ferrite sleeves over the six-core incoming cable where it enters the detector housing.

An EMC committee member discovered he caused his neighbour's PIR-operated lighting to come on when he turned his beam around while not transmitting! The conclusion was that the beam appeared "warm" against the cold background of the night sky, and so the movement triggered off the sensor (what next?).

October 1992

Electronic heating controllers are known to cause RFI to 3.5 MHz operation. These controllers have also triggered house alarms. RC filters are mentioned to overcome the problem. Some gas heaters also cause trouble, which can be overcome by the manufacturer. RF leakage severity vs manufacturing cost is discussed. Gas discharge lamps energised by RF were also tested.

December 1992

Using filters and/or ferrite rings is far more effective than reducing the power of an amateur radio transmitter. Testing toys for the boys' EMC testing re susceptibility and interference is described on train sets and other toys. We quote from the RSGB publication "The Radio Amateur's Guide to EMC".

EMC Problems Caused by Equipment

Amateurs and SWLs have their own EMC problems as well. How often have you been straining to catch that rare DX and the central heating turns on? Well, thermostats share joint honours at the top of the table with computers as the biggest cause of unwanted noise. The pie chart below illustrates the results.

The other category covers a very wide range. The following problems were reported:

- Telephone exchange
- Lawn mower
- Welding
- Compressor
- Drill
- Vacuum cleaner
- TV time base

- Spark eroder
- Cable TV
- Cordless phone 2nd harmonic.

Thank you again to those people who filled in survey forms.

Types of Equipment with EMC Problems

The survey showed that televisions are still the top of the league table of equipment susceptible to RF so TVI is still a good description of a typical EMC problem. The league table is as follows:

1. Televisions
2. Telephones
3. Hi-fi and video recorders

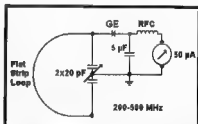
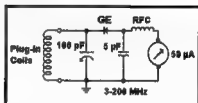
April 1993

An RF ammeter is described, which uses two half-ferrite rings or cylinders clamped around the cable. Refer to figures 1 and 2. The cable acts like the primary winding of a transformer. The RF transformer's secondary winding of 10

turns is connected to load resistors, a diode rectifier and by-pass capacitor, range resistor and a 100 μ A meter.

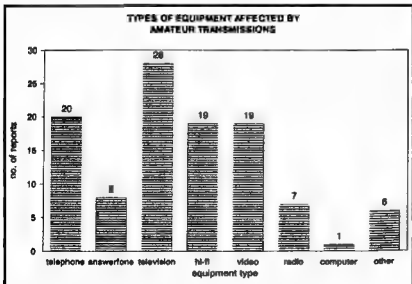
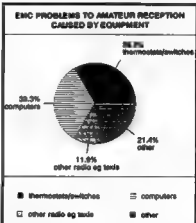
5) An absorption type frequency meter as RF sniffer

These sniffers will detect RF leakage along edges of transmitter cabinets, attached cables from the key or microphone, cables between the transmitter final and the power supply, the main cables, and also along coaxial cables. The circuits are described in figures 3 and 4. The sniffer should also be tuned to harmonics of the transmitter fundamental frequency. This sniffer can be calibrated with a GDO or signal generator.



* 25 Benliffe Rd BEVERLY HILLS NSW 2209

BT



Repeaters — additions, deletions. Have you advised the WIA of changes needed to the repeater list.

Divisional Notes

Forward Bias — News from the ACT Division

Christopher Davis VK1DO

Attendance at our monthly general meetings has been most pleasing despite the chilly weather. A large gathering of enthusiastic amateurs watched in amazement during a demonstration of feedline losses at our May meeting. Hopefully, stronger and more effective VHF stations will result. A keen group of locals had a fascinating tour of the studio and transmitter site of radio station 2CC as part of our June meeting. Our thanks to Jim VK2UZ for organising and hosting this event.

In the second week of June our courses and classes started again with tuition within the subjects of AOCPC theory and morse, both five and 10 words per minute. Although the course is already under way it might be possible to still enrol these few weeks into the course. Please contact Ted VK1AOP on 295 8193 for further details.

Our division has settled into a comfortable pattern of regular exam events, with one held in the first week of June and the next one being planned for early September; the final exam for 1993 being intended for November to coincide with the completion of studies for students in the AOCPC classes. For further details on examination times, dates and venues, please telephone Jan VK1BR on (06) 291 7123.

The technical presentation at our July meeting will include details of equipping your amateur station for simultaneous transmission on more than one band using a common audio system; ie, one single microphone as is desirable for broadcasts. This topic will cover audio decoupling, common earths desirable for both RF isolation and improving the safety of your station in relation to potential electrocution. A description of control systems suitable for monitoring repeater time-outs vital for broadcasts as well as a demonstration on how an automated broadcast is being carried out with a conventional tape-deck controlling transmit keying.

Our division's beacons have been removed from their previous home at Melba, and, apart from 144.410, have been taken off air pending a new location and some improvements in terms of antennas and spectral purity. The 144.410 beacon is operating on a halo antenna in the Weston Creek suburb of Duffy. This location is enabling a reasonable signal

to be heard in Sydney, although no confirmations of its reception in Melbourne have come to hand. The present antenna system is only an interim while plans are refined to restore the system to a more effective ERP.

Our July meeting will return to our usual venue of the studio room at the Griffin Centre where the facilities of our office are immediately adjacent. Our office has progressively been rationalised in terms of its opening hours, with only Saturday mornings currently manned. We are, however, short of personnel for manning the office, with a small number carrying the load. At least another six people are needed, not only to fill up the four Saturdays of the month, but lighten the load on our present team. Please remember our broadcast times have moved to be principally Monday evening with a repeat on the following Wednesday. Please consult the useful listing of information on page 3 of AR each month.

73 de VK1DO

VK2 Notes

Tim Mills VK2ZTM

Membership Campaign

This ended in February and was drawn at the AGM. The prizes were made available to the Division by Kenwood Australia and Joshua Mui, and Gilbert Kwok VK2GKT attended the AGM and Joshua drew out the winners. First prize of a TM-732A dual-band 2m/70cm rig was won by Mr JH Wilmott VK2AJX of Bowral. The second prize of a TH-28A hand-held 2m rig was won by Mr NF Black VK2TNB of Blakehurst.

The winners were presented with their rigs at the June meeting of the St George ARS by Gilbert VK2GKT on behalf of Kenwood and the NSW Division. Our thanks to SGARS for making the prize presentation possible. Special thanks to Kenwood Australia for making the donations available.

The campaign boosted the Divisional membership by 102 members over the forecast gain. NSW membership as at the end of March stood at 1714.

The Annual General Meeting

Held on 9 May last, it was well attended and went from 2pm to almost 8pm. This year there was a ballot to determine the council members for 1993/94. Over a third

of the membership returned a vote. There were 12 candidates for the nine positions. The election result was as follows:

Sandy Bruce-Smith	VK2AD
Roger Harrison	VK2ZTB
Roger Henley	VK2ZIG
Julie Kentwell	VK2XBR
Rob Lloyd-Jones	VK2YEL
Tim Mills	VK2ZTM
Erich Reimann	VK2WH
John Robinson	VK2XY
Terry Ryeland	VK2UX

There was a tied result for the ninth position which was decided on a draw. Peter O'Connell VK2EMU was reappointed as returning officer.

Many hours of the AGM were spent discussing the commercial communications tower facility at Dural. A detailed general report of the project's history and development was presented by the 1992-93 secretary, Bob Lloyd-Jones VK2YEL. This was followed by a lengthy question-and-answer period, which cleared up many misconceptions and much misinformation which had circulated in the weeks leading up to the AGM.

The new council is to call a special general meeting later in the year to report further progress on the project to members.

The principal office bearers for 1993/94 are: President, Terry Ryeland VK2UX; Vice Presidents, John Robinson VK2XY and Roger Harrison VK2ZTB; and Secretary/Treasurer, Bob Lloyd-Jones VK2YEL.

New Members

The following recently became members of the VK2 Division, and our usual warm welcome is extended to them.

J Jose	Amorim	VK2GXW	Newtown
SM Sylvia	Burkitt	VK2SUN	Parramatta
M Mirel	Cardoso	VK2BOD	Cabramatta
SS Samuel	Clark	VK2YCS	Sydney
BJ Brett	Dawson	VK2CBD	East Ryde
AG Alan	Edge	Assoc	Edgeworth
GF Glen	English	VK2JPR	St Ives
NC	Farley	VK2XVW	Gloucester
MR Malcolm	Green	VK2SMG	Guldford
S Stuart	Lamb	VK2STU	Buronga
PA Paul	Rigg	VK2XXD	Manly Vale
B Bernard	Saavedra	VK2BSL	Sydney
Y Yong-ah	Song	VK2TCJ	Chatswood

When you buy something from one of our advertisers, tell them you read about it in the WIA Amateur Radio Magazine.

Happening/Coming Up

Next Trash and Treasure at Parramatta on Sunday afternoon 25 July. Next exams conducted at Amateur Radio House will be Sunday afternoon 29 August. The closing date for applications is 12 August. A reminder to amateurs and repeater groups that any corrections or alterations to the next edition of the Callbook should be sent in NOW to the Divisional office. Deadline is upon us. At the time these notes were being prepared the Division was still in need of a Broadcast Officer to compile the Sunday broadcast script. In fact, several people are required to form a team to share the workload. This would enable the team to operate on a roster. Richard VK2SKY, the retired Broadcast Officer, has prepared a full job description so no-one goes in cold. In the meantime, the broadcast has been prepared by members of council.

NTAC

The committee for the NSW Technical Advisory Committee for 1993/94 year is chaired by Cesar Miranda VK2TCM, with Bob Mayer VK2BMU and John Simon VK2XGJ on committee.

5/8 Wave

Rowland Bruce, VK5OU.

I sometimes wonder what I am going to put in this column month by month. Really, I think, it ought to report on happenings within the division, and give some idea of future events and even policy thinking of Council etc. However, being away as much as I have this year, I find that on occasions I am reduced to musings and ruminations. At other times, of course, one can report on some event or other which is out of the ordinary. So it is this month.

Ian Watson, WICEN Co-ordinator, will prepare an article for future publication on the Great South Australian Bike Ride, but here are some preliminary details on what was a most successful event.

Twenty-six South Australian amateurs, ably assisted by eight Victorians and even one Taswegian provided the communications expertise for the ride, which involved over a thousand riders covering about 100 km a day. The Tassie was a participant who rode alongside one of the sixteen doctors and provided mobile communications when needed. There were also eight nurses and six St John's units involving fifteen St John's members. In all, 300 volunteers serviced the thousand riders.

Communication was primarily on two metres using firstly the Barossa and later the Houghton repeaters. With a five am

start and six pm finish, one would have thought that the ops would have been eager to call it a day, but I understand that searches of hilltops for future repeater sites was a regular night activity. All in all it sounds to have been an event to remember, and quite an eye-opener for those who had not participated in anything similar before. Well done, and thanks for the good publicity!

Talking of the Houghton repeater, which is on 146.825 MHz, the North East Radio Club has been given permission to use it to run a club net, but at the moment I do not have any details on the day or the time. Keep an ear out for them.

Clubs should note that at the last

Council meeting John McKellar, VK5BJM, was appointed Club Liaison Officer, (QTHR).

The latest tuition course has come to a conclusion. By the time you read this I would hope that we have some more suitably qualified applicants for Amateur Radio licences.

Finally, to revert to my opening musings. Please let me have details of things you, or your club or an amateur of your acquaintance have achieved so I can fill 5/8 Wave with happenings in the coming months. Many thanks.

Rowland Bruce
VK5OU

Club Corner

Summerland Amateur Radio Club — Hamfest

Sunday 1 August is the date for the SARC Annual Hamfest. Bring and buy stalls — heaps of treasures awaiting discovery — disposal tables.

Packet demo — HF and VHF stations operating. Trade displays. Maybe a radio foxhunt. Refreshment available (barbecue, tea, coffee, drinks etc). The venue is our clubrooms at Richmond Hill via Lismore. Commencement time is 9.30am.

All amateurs and other interested folk are very welcome to come along to meet the guy on the other mike and to have a good day. Bring your trailer and your money.

For more information, please contact Peter VK2FSD, (066) 25 2334; Ric VK2RIC, (066) 89 5137; Graeme VK2GJ, (066) 85 1336; or on packet radio: VK2EA-2, VK2EJV-2 or VK2YDN-1; all via VK2RPL-2, 668900.

Note your diary now: Sunday 1 August at 9.30am. SARC Hamfest, Richmond Hill, Lismore.

Graeme Virtue VK2GJ
Publicity Officer

Moorabbin and District Radio Club

The annual general meeting of the club will be held on Friday 16 July at 8pm. Hopefully all members will give serious thought to the election of office bearers to carry on the good work of the present team.

Members are reminded that written nominations must be in the hands of the secretary a clear seven days before the meeting. Nomination forms are included in the current issue of the club's newsletter APC, now being prepared.

Our speaker at our August meeting will be telling us about the Jindalee over the horizon radar, so this is a good date to put in your diary: Friday 20 August.

Plans are well advanced for club station VK3APC to take a very active part in both the novice and RD contests.

Allan Dobie VK3AMD

Radio Amateurs Old Timers Club

Members are reminded that we now have an evening re-transmission of our regular morning program on 80 metres hoping to reach members and other listeners who are unable to listen to any of the morning transmissions.

The preferred frequency is 3.635 MHz or higher, depending on QRM. The time is 8.30pm.

Ron Fisher VK3OM, backed up by John Fullager VK3AVY, are the operators for this effort.

Allan Dobie VK3AMD

Geelong Grammar School Hobby Expo 14-15 August

The Geelong Amateur Radio Club VK3ATL and the Geelong Radio and Electronics Society VK3ANR have been invited to participate in a "hands on" hobby expo to be held at the Highton campus of the Geelong Grammar School on the weekend of the RD contest, 14 and 15 August.

Both clubs will be attending and will hold a joint display to enlighten the public attending to a variety of aspects of our hobby.

Interested members of the public will see a working HF radio station and will be invited to log onto the GARC PMS and print out information on the GARC, GRES and WIA. Prospective radio amateurs will

receive a complimentary information package containing material on the clubs, the WIA, amateur licensing and equipment suppliers.

Both clubs will be participating in the RD contest and will be looking to make contacts on HF during the expo, so look for the call signs of both clubs and check in for a chat and a number for the contest.

Albert (Bert) Gnaccarini VK3TU

Geelong Amateur Radio Club

The Geelong Amateur Radio Club VK3ATL meets every Friday evening at its own clubrooms at Storrer St, East Geelong. General meetings are held on the first Friday of each month commencing 8pm and operating nights, technical lecture evenings and social activities are regular features of the club's syllabus.

Wednesday and Thursday evening NAACP classes are held at the clubrooms for YLs, XYLs and harmonics by Lee VK3PK who also manages to find time to teach the advanced novice and AOC class each Friday from 7.00pm.

The club boasts a comprehensively equipped shack with excellent facilities from 80m through to 2m SSB as well as a new packet PMS. The club call sign can be heard on HF on many Friday evenings, particularly on scheduled operating nights when the club station is put to air by members.

Information about the club or its activities is available on the VK3ATL PMS and messages can be left on the BBS via VK3ATL @ VK3IBM. For those not equipped with packet, either write to GARC, PO Box 520, Geelong Vic 3220, or come along any Friday evening.

Albert (Bert) Gnaccarini VK3TU

Geraldton Senior High School

VK6AGN, the call sign of the Geraldton Senior High School, is once again on the airwaves. The club was started approximately six years ago by the then principal Mr Tom Tuffin, and after two years of silence can once again be heard on 14 MHz every Monday afternoon from 0730-0800 UTC.

The enthusiasm of Geraldton Amateur Radio Club members Bob Hollingshead VK6KI and Bob Marlow VK6PJ have helped Mark Lynch (teacher) to give the students of the school an opportunity to listen and speak to people both nationally and internationally. In addition to learning for the novice licence.

The kindness of Bob Marlow in allowing the school to use his Kenwood TS520 (while our Yaesu FTDX560 is being reconfigured) has helped the club to be kicked off again. Mark was very surprised

(and scared 20 metres above the ground) after he and Bob climbed onto the top of the school to inspect the Yagi triband antenna. The wiring to the antenna had corroded and completely broken. No wonder we couldn't hear too much. Within an hour Bob was back up the mast and made the Yagi come to life again.

"My granddad's got one of these," was commonly heard at our first meeting, and it is this relationship that sparks interest for young people today. It is very pleasing to know there are kids in our schools wanting to continue in the hobbies of their grandfathers; maintaining a tradition if you like.

We have four students attacking the regulations and Morse with relish at the moment and, hopefully, it won't be too long before we hear they have their own call signs. For the moment they are still

keen to turn the dial, locate a QSO, call CQDX, or talk to call signs whenever the opportunity arises.

Many thanks must go to Bob Marlow VK6PJ, not only for the use of his radio, but also for his dedication in coming up to our radio shack every Monday and helping us out.

We thank the following call signs who have given valuable time to talk to us on a Monday: VK3VQ; VK2CJM, VK3GEE; SM5GZ; HC8A; ZL2FF, EI7CV; EI8EQ

We look forward to further QSOs and ask that if you've time, please listen out for the kids on VK6AGN, club station for Geraldton Senior High School.

**Mark Lynch
179 Gregory St
Geraldton WA 6530**

Pounding Brass

*Stephen P Smith VK2SPS **

To start with, we amateurs should bow our heads in honour to Gilbert Griffiths VK3CQ for his excellent efforts in producing Pounding Brass over the many years it has run in this magazine. To come up with a new topic each month for us amateurs, plus family and work commitments, is something to behold. Let me say thank you Gilbert, from myself and the rest of the amateur community for a job well done.

You now must be wondering who I am and what I've got to offer to this column. Well, to start off with, I'll give a little history about myself, then go on to explain how I see this column going in the next few months or so.

"The man who started it all, Samuel Morse."

Born in Sydney in the early '60s, I have spent most of my life on the northern beaches. Attended Narrabeen Primary School where I was introduced to amateur radio and electronics in general. My interest grew in this exciting field, building my first crystal radio at about age 10, and gaining my Novice at 16 while attending Narrabeen High. One of my main interests was constructing low-power (QRP) CW transmitters. I can still remember that first on-air QSO with an amateur on 80m, with something I built myself.

I finished high school and joined Army Special Forces, which gave me a solid grounding in using state-of-the-art equipment in both CW and SSB-type modes. I did my fair share of travelling, visiting many interesting countries.

Upon leaving the Army I went into the communications field, getting a job with Telecom and spending most of my time in telephone exchanges.

I attained my Electronic and Communication Certificate from North Sydney College, then later my Full Call licence.

I'm still currently with Telecom, situated at Mosman, Sydney, where my duties include the maintenance and testing of electronic switching equipment called ARE and AXE.

Other interests include camping, travel, rock-fishing and, of course, DXing. Personally, I must say I'm very honoured to be able to write this column and will do my best to maintain the high standards required.

Let's get down to business. Where do I see this article going now and into the future?

If Morse code is going to survive in this day and age we must get the younger generation more involved, because these people will carry it into the 21st century. So, if you hear a CQ from a newcomer, give them a chance. Have a QSO with them even if it means reducing your speed. Remember, we were all beginners once. My approach will be back to basics. In the next few issues we will begin with

a two-part series on the man who started it all, Samuel Morse, covering his early history up to when he invented the now-famous Morse code.

Then we move on to early telecommunications here in Australia, how Morse code came into being, how it spread and how it changed the face of communications in those early years.

In further issues, we will cover topics such as:

1. Types of code used past and present.
2. How to learn the code.
3. How to increase your speed.
4. How to answer a CQ call in the correct manner
5. Equipment used, straight keys to iambic keying.
6. From Morse code practice oscillators to computer-generated Morse.
7. Morse scene from overseas.
8. Morse used in the armed forces. Styles of training used by the different branches.
9. Projects from the novice to the full call.

The list is endless; I'll leave a few surprises for later issues. I might even throw in some questions at the end of each issue, just to get you thinking. No answers, of course. They come in the next issue.

The thing to remember is that this is your magazine. Input from you, the reader, is very important to me. Tell me what you think, and what you want. Maybe even a funny story relating to an on-air CW contact so we can pass it on to our readers.

To the novice and the people who are studying for a VK call, if you have any questions relating to Morse code or related subjects, even if you think the question is silly, drop me a line and I'll do my utmost to answer it for you.

Remember next month's issue is on Samuel Morse, the man who started it all! Until then, 73

Please forward correspondence to me at the address below.

* PO Box 361 MCNA VALL NSW 2103

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ALARA

Robyn Gladwin VK3ENX*

The New ALARA Year

After the recent Annual General Meeting, ALARA is pleased to announce the new Office Bearers.

President
Imm Past President
Vice-President
Vice-President
Secretary
Treasurer and Souvenir Custodian
Minute Secretary
Publicity Officer
Award Custodian
Historian and Contest Manager
Librarian
Sponsorship Secretary
Newsletter Editor
State Representatives

Maria McLeod VK5BMT
Jenny Warrington VK5ANW
Christine Taylor VK5CTY
Judy Atkins VK3NYL
Bron Brown VK3DYF
Margaret Schwerin VK4AOE
Christine Taylor VK5CTY
Robyn Gladwin VK3ENX
Jessie Buchanan VK3VAN
Marilyn Syme VK3DMS
Kim Wilson VK3CYL
Poppy Bradshaw VK6YF
Dorothy Bishop VK2DDDB
Dorothy Bishop VK2DDDB
Bron Brown VK3DYF
Margaret Schwerin VK4AOE
Meg Box VK5AOV
Poppy Bradshaw VK6YF



Birthday Celebrations

The 4th Saturday in July is ALARA Birthday Activity Day from 0800 to 1200 UTC. This year the date will be 24th July. Suggested frequencies are 3.588, 14.288, 21.188, 28.588 and 28.688 MHz.

ALARA was formed in 1975 by a group of women only some of whom were already amateurs. The foundation President was Norma Boyle VK3AYL (now VK2DJQ). There are now over 200 members throughout Australia and, through our Sponsorship scheme, in many overseas countries. The main aim of ALARA is to encourage the active

participation of women in amateur radio and we hope this Birthday Activity Day will provide an opportunity for other radio amateurs to help us celebrate on air.

Interesting DX

For me, speaking to people in distant lands is still one of the great pleasures of amateur radio. I was thrilled to receive this attractive QSL card from the French Antarctic base at Dumont D'Urville

* PO Box 438 Chelsea 3196 VK3ENX@VK3YZW

Awards

John Kelleher VK3DP Federal Awards Manager

NZART Awards

When applying for NZART Awards, courtesy demands you observe the following: (1) print your name, address and call sign; (2) clearly state what award you are applying for; (3) supply checking sheet with call signs, dates of QSOs, mode etc; (4) enclose required funds as requested. Stamps or currency from any country accepted instead of IRC, but cheques NOT desirable.

Post applications to Awards Manager ZL2QK, 5 Townley St, Gisborne 3801. New Zealand. Overseas applicants pay \$2 for each NZART award, except WAP (4) and 5x5 (\$3). Airmail postage is \$1 extra.

The most popular awards use WAP for contacts with 30 Pacific countries (eg those which count for Oceania for WAC) followed by NZC (New Zealand Counties) for which the basic requirement is contacts with 20 different NZ counties. Endorsement for 40, 60, 80, 100 are made with a special certificate for all 112. Next is the WAZL for contacts with 35 different branches of NZART. A branch list is available for \$1 and SASE.

The WAD is a VHF Award for contacts on any VHF band with ZL1, ZL2, ZL3, ZL4 — one contact per call area. Cost \$1. Endorsements for satellite QSOs.

The IARU Region 3 Award

This award is available to licensed amateurs and SWLs, for contacts from 5 April 1982 inclusive. QSL cards are not required, just certified logbook entries. Eligible countries are Australia, Bangladesh, Brunei, China, Fiji, French Polynesia (FO8 only), Hong Kong, India, Indonesia, Japan, Korea, Malaysia, New Zealand, Pakistan, Papua-New Guinea, Philippines, Singapore, Solomon Islands, Sri Lanka, Thailand, Tonga, Vanuatu. PLUS, one country credit from US territories in the Pacific from Guam, Northern Marianas, American Samoa, Wake Island and Baker-Howland group. Additionally, one country credit from Pitcairn Island, Chagos Archipelago. Current total of available countries is 24. The Award dates from 1 January 1986. Basic Award seven areas; silver endorsement 15 areas; gold endorsement 20 areas.

There are numerous other small awards available, but these are the most popular by far

MALAYSIA

The Malaysian Amateur Radio Transmitters' Society (MARTS) issues the

Worked All Malaysia Award to amateurs who work and confirm two 9M2 contacts, and one each with 9M6 and 9M8. The Award and endorsements are issued for 2xSSB, 2xCW and 2xRTTY, mixed or single band, mixed or single mode, for contacts on or after 31 August 1957. Send a certified list and \$US5 to MARTS Awards Manager 9M2FK, PO Box 13, Penang, Malaysia.

MALTA

The Malta Amateur Radio League (MARL) issues the Dip Med Award for having worked and confirmed 15 of the 26 Mediterranean countries from the list below. A 9H QSO is mandatory. Send a certified list and \$US3 to MARL, PO Box 575, Valetta, Malta. The country prefixes are CN, EA, EA8, EA9, F, I, IS, IT, OD, SU, SV, SV5, SV8, TA, TK, TZ, YK, YU, ZA, ZB, 3A, 3V, 4X, 5A, 5B and 7X.

JORDAN

To apply for Royal Jordanian Radio Amateur (RJRAS) Awards, applications must be accompanied by photocopies of the QSL cards and 10 IRC (or equivalent). Send applications to Awards Manager, PO Box 1055, Amman, Jordan

- (1) The Silver Award, issued by King Hussein JY1, requires proof of working six (6) different JY prefixes.
- (2) The Arabian Knights Award is for working 10 Arab countries, one of which must be JY1 or JY2, since 1 January 1971. The Arab countries are

A4, A6, A7, A9, CN, HZ, J2, JY, OD, ST, SU, T5, Y1, YK, 3V, 4W(?), 5A, 5T, 7O(?), 7X and 9K.

QSL Help

To help some amateurs to obtain confirmation of Russian Arctic and Antarctic station contacts, send your QSLs direct to Yuri Lobatshev, UA10KCL at Chaun QSL Bureau, Box 44, Pevek, Magadan'skaya Oblast 686610.

DXCC Profiles — Austin Condon VK5WO, Laura SA

Austin began shortwave and broadcast band DX listening in 1939.

He joined the RAAF in 1943 and served in England as a wireless air gunner, 101 Squadron, RAF on Lancasters.

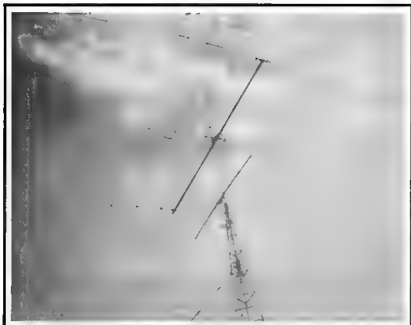
Austin returned to civilian life in mid-1946 and started as an SWL again, and became interested in amateur radio. He was licensed in December 1949. His first rig was a Type 3 Mark 2 with 25 watts on CW. He was interested in the DX part of the hobby right from the start. During 1953, Austin advanced to a rack and panel AM rig, with parallel 807s and 90 watts. This rig was built from a Bendix TA12B aircraft transmitter and a TU6B tuning unit. He used this rig until 1965. The main antenna in this period was a home-made 20 metre three element beam, and dipoles for 40 and 80 metres.

1965 first black box a Swan 400
1967 changed to TH6DX
10/15/20, which was used until 1984

1970-1981 FT101/FT101E with liners
FL2100B and FL2100Z
1981 FT-ONE



Austin Condon VK5WO proudly displays his car with its personalised number plates. A true amateur!



Part of the VK5WO antenna installation, a 3 element KLM 40 metre beam at 82 feet (top), with a CUSHCRAFT A4S for 10, 15 and 20 metres at 50 feet.

1984 changed main antennas to an ATN eight element log periodic. This antenna provided excellent service for nine years.

1986 — Kenwood TS940, and in 1988 added linear TL922.

At present the main rigs are a YAESU FT1000 transceiver, YAESU FL7000 Solid State Linear, and an ICOM IC 761 transceiver with TL922 linear amplifier.

The present antennas are:-
— Moeley Pro 96 (installed March '93)
— three-element KLM 40m
— Cushcraft A4S
— Dipoles for 80 metres and 160 metres

Awards

The first application for the WIA DXCC for phone and open was made in August 1962. The awards manager then was the late Alf Kissick VK3KB.

WIA Honour Roll

Currently 323 countries have been worked on phone and open.

ARRL No 1 Honour Roll. All countries worked phone and mixed.

ARRL 5 band DXCC.
All new countries that have been added to the list during the past six months have been worked and confirmed.

The last country worked to complete the current list was VP8SSI, South Sandwich Islands in March 1992

Hints for up-and-coming DXers

Most of the previous writers in this DXCC profile section of AR have covered the important aspects very well. DX newsheets such as QRZ DX, DX Bulletin and RSGB DX Newsheet, have been found to be very helpful, with general DX information, QSLing etc. A lot of DX information can be gained from the INDEXA Net 14236 kHz daily at 2330 UTC and 14256 kHz net daily at 2330 also. Both from USA long path. Swapping of DX information with your DX friends.

The hardest country to work was Bouvet 3Y5X.

The best buy in amateur radio was a 70ft DCA tower in 1959 for \$120.

The Future

Having worked all the current countries on phone, Austin has only 280 countries on CW confirmed, so has plenty of countries to chase on this mode.

Occupation

He worked and lived in the same hotel for many years, first with his parents, and then with his wife, and ran the business until retirement in 1981.

Austin built a house about four doors away from the business QTH, so there was no great problem in shifting his radio gear and tower.

Age — Coming 69 years.

Silent Keys

Due to increasing space demands obituaries should be no longer than 200 words.

The WIA regrets to announce the recent passing of .

R G (Reg)	Morgan	VK2ABM
M H	Stuckey	VK2ARF
C (Colin)	Paterson	VK2BCP
G A (Rick)	Ewin	VK3AGC
R J (Robert)	Cayzer	VK3ATC
H B (Dick)	Fitzsimmons	VK3RZ
J C (Cress)	Clarke	VK4AK
T (Ted)	Walton	VK4ATZ
M J (Mick)	Johnston	VK4JL

Hilary Blanchard (Dick) Fitzsimons VK3RZ

Born at Taralgon, 1/1/1918, Dick, with his parents, moved to Melbourne, settling at Hawthorn. Failing to obtain a Law degree Dick joined the PMG Department as a Technical Officer, working at the laboratories and the short-wave transmitting station at Lyndhurst. He retired in 1976.

Married in 1943, Dick and Gwen raised four children, and now have 11 grandchildren, one of whom, Leigh, recently passed his AOCP test, much to Dick's delight. Dick was a family man, joining in family games etc. He also loved music, piano, records, cards, Scrabble and photography, doing his own developing and printing. A perfectionist, he also enjoyed carpentry and repairing everyday objects.

Amateur radio was his greatest love. He obtained his licence and callsign VK3RZ in 1938. Using home-built equipment he operated on 175 metres as well as other bands. When Victoria was ravaged by bushfires in 1939 Dick operated a radio at Woods Point, providing vital communications.

Tragedy struck Dick with loss of speech due to a cancerous throat operation about two years ago, but by use of an artificial voice production device he was able to communicate.

He passed away on 3 April 1993. The large attendance of family and friends at his funeral service included many amateurs.

Our condolences to Gwen and families.

Herb Stevens VK3JO

BY

Help stamp out stolen equipment — always include the serial number of your equipment in your Hamad

International Amateur Radio Union Monitoring Service (IARUMS) — Intruder Watch

Gordon Loveday VK4KAL *

The International Amateur Radio Union Monitoring System (IARUMS) is set up to record, report, and encourage the removal of non-amateur stations from amateur band allocations. Stations targeted are usually broadcast or commercial stations from other countries. Priority is not given to local "pirates". Each country appoints a Co-ordinator, who is responsible for collating reports and forwarding them to the appropriate regulatory authorities (DoTC in Australia).

Each WIA Division, apart from VK3, has a Divisional Co-ordinator to collect reports

from that Division and forward them to the Federal Intruder Watch Co-ordinator. But the main strength of the service is in the individual amateurs who spend time regularly listening on the bands and identifying types of signals and stations.

More Intruder Watch listeners are always required. Volunteers who contact either their Divisional Co-ordinators or me direct will be supplied with information, log sheets and tapes to assist in identifying modes.

Below is a recently logged list of intruders into the amateur bands:-

Summary of Illegal Intrusions for April 1993

Freq	Date	UTC	Mode	Remarks	"X"
7002	180493	0540	??	Series of "dahs"	
7002.5	210393	MNI	A1a	"V" Beacon ? RCQ 45	28
7008	2604	1052	F7b		
7039.5	2103	mni	A1a	"F" Beacon "A"/"K"/"I" M	37
7049	310393	2140	F1B	UHF 3 Data only	3
7049	0804	2130	a1a	5 figure groups CIS	
10115	2304	??	A3C	Wx Fax	
14003	2004	1015	N0N		
14008	190493	1237	MXD	F1 B & N0N	2
14020	0504	1028	A1a	Slow "dit" on a CQ	
14028	1304	1247	N0N		
14034	1404	1155	A3E	2 FOR VOICES NO ID	
14061.5	3003+	mni	mxm	F1b/N0N/F7B/ DATA	29
14062	210393	mni	mxm	F7B,AC3,PON	24
14125>	MNI	mni	mxm	N0N,F1B data	8
14130.5	1404	0620	F1B	DATA	
14135	1204	0535	F1B	140 bd sync	41
14140.5	210393	0755+	MXD	UMS F1B,A1A,250 Hz CIS	4
14210	0404	2205	??	140 bds syncro	23
14210	2103	1040	A3E	H2 of 7105 ??	4
14211	0104	1047	F1B	RTTY	
14217	150493	0800	F1B	RTTY	
14217	2503	1040	mxm	UMS 250 Hz A1A,N0N	10
14279.3	2603	0850	A2a	23 kHz wide	15
14284/6	3103+	mni	A1A	VRQ Some sigs 20 kHz wide	
14338	300493	2230	A3C	Wx Fax	
18075	2904	0813	A3J	Indon b/c stn non amateur	
18100	0304	0542	P0N	O T H R	
18108	2504	0621	F7B		
18135	280493	1100	A3E	B/c stn pips @ 1100,n0ID	4
21031.5	2103	0045+	mxm	UMS,250 Hz,A1A,F1B,R7B	21
21283.5	2103	0752	mxm	UMS,MNR,F1B,A1A,250 Hz	25
21283.5	1404	1012	F1cw	Moscow Naval Radio [UMS] CIS	
21340	280493	1059	A3E	B/c stn Music v weak	
24894	2804	0651	A3J	? Marine/English/telegrams	
24904	2504	0131	A3E	Asian coastal radio stn	
24937	1404	0948	F1B	RY'S + Piccolo??	
24960	250493	0450	F7B	DAILY,Middle east direction	
24975	1104	0919	A3E	Asian military	4
28515	0104	1044	A3E	B/c stn non amateur	
28400	1304	1103	A3E	B/c stn topic middle east	
29575	1304	1100	A3E	B/c Russian n/amateur CIS	
29640	020493	1019	A3E	B/c stn Chinese	

Logs this month from VK's: 4AGL, 4AKX, 4BTW, 5TL, 6RO and 6XW

Some more removals, to stress Persistence and Perseverance does pay off.

18161.7 F1b transmission between Paris and Mali, is open again for our use.

18118 Polish Embassy in New DELHI, has been removed, maybe not by our own DOTC intervention, but by the possible information forwarded by R-3 observers.

FCC has further requested the Chinese Authorities to vacate 14056.5 kHz, it being one of the freq used for military marker pulses and data bursts.

Asian fishermen are active in southern area of R-3 on 14018, be on the lookout for them. Military traffic has been reported on 24962 again,thought to be of Asian origin.

Navigation pips heard on 21031.5 are not a "motor boat" but are from UMS, these may be a bit quiet till about September.

Are you aware that 70% of 7-71 MHz is NOT AVAILABLE to amateurs? It is up to you to report these intrusions, DO NOT sidestep them, if you do, you stand to LOSE THE LOT OF 7MHz. Remember it was once called 40 metres!

This area is seeing an ever increasing number of beacons, between 7002 and

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7039.5 to S9, signing V, F, K, IM. 7006 is "hosting" UMS. R7B stations roam between 7022.5 & 7030 MHz.

How long are YOU going to tolerate these intrusions? If YOU DO NOTHING, you deserve to be wiped out! It is becoming very obvious to me that most amateurs in VK are willing to give up those frequencies their predecessors fought hard to retain. Where is this "give it a go" now? We in the MS may not always win out every time, but a few words of Abraham Lincoln, may jog you "You may be disappointed if you fail, but you are doomed if you don't try". We try. Are you going to help?

To the states without a co-ordinator, how about becoming an ex-officio for your Division? It is not a hard job, I've got that! Get back to me. In VK4 we have a lady observer, welcome to the Service, June.

The "patrolling" of our bands is essential for our well being, it costs a minimum of 2 hours per week.

From Robin VK7RH [co-ord] comes a snippet: From Hermann, OE1HVB [Austrian co-ord] on harmonics, quote "Radio France International, always said the signal on 14270 is a harmonic of 7135 — until the day when the transmitter on that frequency was in French, and the harmonic was Serbian! Or are we also to believe that harmonics translate into other languages?" end quote. I have also had suspicions along these lines, a further checking procedure may be indicated.

72
FTWC

* WBA Federal Intruder Watch Co-Ordinator
Freeport No 4 Rubyvale Cld 4702 or VK4KAL@VK4UN-1

Repeater Link

Will McGhie VK6UU*

On Air

If you do not have experience in placing a repeater on air, it can be a daunting task. Sometimes even more difficult than your wildest dreams.

Most repeaters are club projects, but usually one or two amateurs end up doing most of the work. From this point on, the work load grows and grows. What follows is some thoughts on how the work load may be made a little easier.

Repeater Sites

Before any construction takes place a repeater site is the number one priority. This can be difficult as prime radio sites are much sought after by many services. Sites tend to fall into two categories. The first is an already established site with power, building and tower. As a guest on the site all efforts must be made to remain welcome. The second type of site is one where everything has to be built from scratch.

If you are faced with building a repeater site from the ground up, then it can be quite a project. One of our repeater sites at Busselton VK6RBN took the best part of a year to build. The remoteness of the site and the large 50 metre (150 feet) tower, together with inexperience, all added up to the long construction time. A decision was made to power the site via a low voltage cable run from a nearby farm house, some two kilometres away. A total of eight kilometres of copper wire was run along the fence line. The system charged a battery at the repeater site but

became difficult to maintain. Eventually solar panels were used to power the site and the copper wire power feed disconnected. What seemed like a cheap solution (the copper wire was a donation) turned out to be a liability. Lesson number one; don't cut costs at the expense of long term reliability. The day will come when it will cost you more in time and money.

Lesson number one ... don't cut costs at the expense of long term reliability.

This point is worth making again, because after 20 years of fooling around with repeaters and repeater sites the most important lesson has been, *don't cut corners*. Sure hearing the repeater on air as soon as possible becomes your point to all this effort, and it can sometimes be done with a minimum of money and effort, but chances are you will pay double in the end.

Another point about remote sites that require their own power source. Try to avoid using wind power. Two of our sites in VK6 were powered by wind generators. One a large 30 A generator, and the other a small 4 A unit. Both became a constant source of trouble. Mechanical problems occurred again and again. Solar power is the way to go.

Security

The next problem to be faced with remote sites is security. Just how much effort should be put into making the site vandal proof? Experience in VK6 so far has seen little vandalism. There has been some with coax cables being cut, but to this point we have been lucky. Unfortunately, no matter how secure your site may be, there is always a way of damaging the installation. Perhaps the only type of vandalism that can be guarded against is the opportunistic type. "Just happened to be passing and thought I might smash something." Usually these people are not equipped with the tools to do considerable damage. The dedicated vandal armed with the right tools is hard to stop.

The selection of housing for your repeater at a remote site has many possibilities. The method that has been used in VK6 at a couple of sites is a small tin garden shed. The shed is placed on the cleared site and cement poured in to make a floor and to anchor the shed to the ground. A sun roof is placed on top with a large overhang. Stronger locking is added to the door, and along with a fitted bench, the idea has worked well.

Tower Selection

The type of tower depends on how much height is needed to take best advantage of the site and the type of repeater, duplexed or separate aereals for receive and transmit. It is an advantage to be able to climb the tower safely. Guyed triangular mast sections probably are the easiest to construct. It does mean drilling or digging into rock at most hill top sites. This can be a difficult problem as some equipment is needed to dig out the guy points. If a single aerial is all that is required, then 10 metres of unguyed mast fixed to the repeater building is one way around the problem. Extra attention has to be paid to the structural strength and anchoring of the repeater building in this situation.

When planning your repeater, a decision has to be made early on, as to whether it is to be a duplexed repeater running into one aerial, or separate aereals for the receiver and transmitter. There is no single answer to this. There are advantages and disadvantages to both. Separate aereals for receive and transmit can be cheaper and easier if you have a 30 metre (100') tower. The aerial separation would have to a minimum of 12 metres (40') and preferably 20 metres (60 feet). Even with 20 metres of aerial separation a cavity filter in the receive and one in the transmit coax feed lines would be required. If the normal band pass filter offering an extra 10 dB of isolation is not

enough, then each of the cavity filters can be configured as a notch filter offering 35 dB of isolation.

My choice for ease of operation would be separate antennas as far apart vertically as possible on the mast, combined with a cavity filter in each aerial feed. If you have no experience with cavity filter duplexers, they can be a source of considerable effort to see them up and running. At a latter stage a duplexer can be added.

Antenna Mounting

A good start is for two dipoles to be mounted between an eighth and three eighths of a wavelength out from the tower, one for receive and one for transmit. Don't assume that there is little radiation back through the tower producing poor signals. The signal level is reduced out the back of the tower, but the reduction can be as little as 6 dB. Tests I did on a dipole offset by a quarter wave from a 50 mm (2") pipe showed a front to back ratio of 6 dB. The larger the tower structure the more attenuation, but a figure higher than 10 dB would surprise me. If someone out there has figures on front to back ratios of a dipole mounted off a typical triangular mast, you might let me know so I can pass it on.

One other point about remote sites. Include in your design some form of DTMF remote control. The most important is to be able to turn the repeater transmitter off. All sorts of remote functions can be built in but the most important is to be able to turn the repeater off. Not just in case there is an interference problem, but say the power supply fails causing the battery to go flat. Once the regulators in your repeater design are not able to regulate with the low input voltage, strange things can happen. Things you would prefer not to have on display for long periods of time. A DTMF code can silence the repeater transmitter and prevent the battery from being discharged further. Worth its weight in gold!

Low Voltage Cut Out Switch

One other feature that is worth the trouble to include at remote powered sites, is a low voltage cut out switch to remove the power from the repeater and any other equipment in the event of a power supply problem. It is all peace of mind insurance. If a problem develops, and it probably will, not having to visit the site urgently is to your advantage, believe me. A design for such a low voltage cut out switch was featured in Repeater Link for February 1993.

Equipment Selection

So far the discussion has not mentioned the repeater itself. The choice you make on what equipment to use for your repeater is important. A few years ago, before pagers were on the scene, receiver performance in a strong signal environment was not a big issue. Now it is the most important requirement. What makes a good receiver in this situation is a little hit and miss. All sorts of information can be looked at and discussed at length but you may not have access to this or be able to relate it to your repeater situation.

The tried and true Philips FM 828 has good performance all round. If you want to make the job of putting a repeater on air easier, then this is a good choice. This radio comes in several forms. The standard 25 watt mobile. A 50 watt rack mounted base station, the FM 814, and a radio telephone model FM 880 25 watt, also rack mounted.

There are many other types of radios that would perform as well as the FM 828, but at the moment the FM 828 can be purchased on the disposal market easily. Another advantage is that, being older technology, they are a crystal radio without a computer and synthesizer on board. All useless technology in a single channel repeater. The current consumption is low as well, unlike the newer radios that have a receive drain of up to 1 amp.

The Port Augusta Amateur Radio Club have produced an 18 page booklet on how to convert an FM 828 to amateur repeater service. Included in this manual

is a DTMF control board, Morse ident board and many drawings of all the changes and additions. The manual was compiled by Mac VK5AM and may be available from the club. The club's address is PO Box 1337 Stirling North SA 5710. My copy came from Alan VK5BWG who is on Packet @ VK5SU.

Repeater Performance

There is so much that could be written about putting a repeater on air for the first time. The most important is not to cut corners. I know I'm repeating myself, but if none of the previous thoughts are of much use, this one is. If your new repeater ends up on air on the cheap, and its performance and reliability are poor, you will not want to take it off air because amateurs start to rely on it being there. To take it off air and fix all the things you should have done in the first place now becomes difficult. What started out as a "lets get it on air just for a trial", becomes *THE* repeater, and it stays on air operating below the performance you wanted.

If you are a new-time builder and would like more information on building a repeater for the first time, perhaps there are amateurs out there who could help by putting their thoughts on paper so I can pass them on.

Next month's Repeater Link will be a graph and explanation on aerial separation for repeater operation without a duplexer.

* 21 Waterloo Cr Lismurdie 8078 VK8JU/VK8BBS

■

Spotlight On SWLing

Robin L. Harwood VK7RH*

Conditions this midwinter are very good in the daylight hours, particularly on the lower frequencies. Propagation has only been fair, due mainly to the declining sunspot numbers. Frequencies above 17 MHz have not been propagating very well, so I have mainly been monitoring down from the 19 metre allocation and lower. Around 0200 UTC, which is midday locally, I have been noting signals on the 49 metre allocation, especially from European locations. Swiss Radio International and Deutsche Welle are quite audible as is the Spanish National Radio in Madrid.

Signals are coming down the Atlantic Ocean across the tip of South America, before swinging up over the south island of New Zealand and southeastern Australia. There is also a pronounced flutter on the signals. Later on, around

0300, propagation alters to be across central and southern America, resulting in stronger European signals coming in. I realise that many listeners further north in NSW and Queensland do miss out on this rare midwinter phenomenon.

Recently I managed to extract a 83 kilobyte file off the local Packet BBS. It was the complete BBC World Service transmission schedule for the current propagation period until the end of September. My old French master from College days, has been kindly passing on "World Radio", the monthly BBC World Service magazine, which is very useful.

But now, with information off the Packet or on E-mail, I will have access to files such as this one, which is invaluable in assisting me to ascertain the following information: location of the sender, the power employed, the direction or beam

heading, the duration of programming and what language is used. The VOA in Washington has been releasing similar schedules of their information into the Internet system

I have noted that station KNLS in Anchor Point, Alaska is being heard here at 0800 on 9615 kHz with English religious programs and occasional Japanese announcements. This broadcaster is also heard on 7365 kHz around 1100 in Russian and later in Chinese programming. Signal level on the 31 metre outlet is good, yet there is a heterodyne from an Indonesian station off frequency.

While I am on heterodynes causing problems, I note that the ABC domestic shortwave sender based in Queensland has been having interference from a Latin American broadcaster about half a

kilohertz down from 9660 kHz from the local late afternoons well into the evening.

By now, I will hopefully be hooked into the E-mail system, which should allow a faster flow of updated SWL information from other overseas sources. Although I am increasingly getting quite a deal of useful tips off the Packet system, I still rely on what I am able to monitor off-air. Packet radio and hopefully E-mail should give me sufficient advance information to include in this column. I will possibly have the information of how you will be able to reach me via E-mail in a later column.

Meanwhile, I can be reached at the address below or via Packet as follows: VK7RH@VK7BBS.

Until next time, the very best of 73 and good monitoring from Robin L. Harwood VK7RH.

* 52 Connaught Crescent, West Launceston TAS 7250

Technically the Isle of Man is an independent land, being responsible to the reigning monarch rather than to the British Parliament.

Much of the Manx history is associated with that of the Irish mainland. The island had a pre-historic age dating from some thousands of years BC, and an early Christian period about 400-800AD. Saint Patrick is said to have visited the island during this period and, according to legend, banned snakes from the island. The Christian period was followed by the invasion of the island by Norsemen or Vikings, the latter term being derived from the Fjords or Viks abounding along the Scandinavian coastline. The partial return to paganism brought about by the invasion ended with their defeat at the hands of the Scots in the mid-13th century. The gift of the island to Sir John Stanley in 1405 by King Henry IV finally led to stable government.

QSLs from the WIA Collection

Ken Matchett VK3TL*

Historical Documents Received by the WIA

The Wireless Institute of Australia has been very fortunate in having recently received original QSL cards of two of the most famous names in amateur radio history. These are the Frenchman Leon Deloy 8AB and John I Reinartz 1XAM who, together with F H Schnell 1MO, made the first transatlantic amateur radio QSO on the night of 27 November 1923. It was this single event that opened up the world of DX. It would be true to say that the importance of such documents to the radio historian would be equivalent to a letter from Capt James Cook coming into the hands of a researcher of Australian history.

The generous benefactor is Mr John D Heys G3BDQ of Guestling near Hastings, England. John has a reputation in England as a radio historian and collector of historic documents, in particular QSL cards of the early pre-war period. In addition to the two QSLs referred to, John has contributed more than 100 QSLs of that vintage from almost as many pre-war countries. An historically valuable contribution, indeed. The honorary curator of the WIA Collection, Ken Matchett VK3TL plans to exhibit the QSLs and other documents to as many radio clubs as request it.

The Isle of Man

Situated in the middle of the Irish Sea, the Isle of Man enjoys a unique

geographical position in that it can be seen from England, Scotland, Wales and Ireland. It is a very small island, being approximately 50km long and 16km wide. It would probably be true to say that most people know little about the country and its history, apart perhaps from the fact that everybody has heard of the Manx cat — a tailless creature derived from a genetic mutation. Nowadays the cat is a protected species on the island. (There is even a Government cattery). There seems to be no satisfactory explanation of the name of the island, although many Celtic scholars believe it may be derived from "Mannin", an early tribal name.

Q30F

Possibly the earlier amateur calls used in Great Britain were the initials of the operator. In the USA these date back to at least 1903, but there is little known of their use in England. Then followed calls with the letter "G" (Great Britain) in the mid-1920s, and it is quite possible that operation from the Isle of Man took place during this period. Then followed the system of "intermediates" (see AR Nov 1991). The letters EG (E=Europe, G=Great Britain) were used for Great Britain and Northern Ireland as listed in the Radio Amateurs Handbook of 1927. The system of prefixes as we now know them (introduced on 1 January 1929) allocated the letter G to "Great Britain except Ireland". Just before World War II, Scotland was given separate country listing, but with the G prefix, whilst

ST. BARNABAS' VICARAGE, DOUGLAS, I.O.M.			
TO RADIO			
G 3 N P			
This confirms our QSO of		Isle of Man	XMITTER
... 19 ... 1932		G3NP	... 50.66 ...
at ... G.M.T			Input ...
on ... Mr.			Aerial ...
... Mr.			QRG 7151 Hz
R.S.T. 5.7.9		RX 182.	
Q.S.A. ... R ...			
Remarks:			
PSE QSL OM: DIRECT OR VIA RSGB. Vy 73 & DX. OM. HPE C'N N			
Op. Rev. E. D. GEDDES.			
C. E. F., DOUGLAS			

Northern Ireland received the GI prefix. There was no special allocation to the Isle of Man.

The earliest pre-war QSL from the Isle of Man in the WIA collection is dated 19 August 1938, only a fortnight or so before the outbreak of war. It is from the Rev E Giddes G3QF to an English radio amateur. On G3QF's QSL we read "Isle of Man G3QF Great Britain".

GD6UW

In the ARRL countries list of 1949 we find the GD Isle of Man prefix, but it had been used in 1948. (The collection contains the QSL of GD3UB dated 15 June 1948). Several DXpeditions like GD6UW by the Cambridge University Wireless Society have been conducted to the Island especially to cover special events.

GDØLQE

The most famous Manx tradition is undoubtedly the Tynwald assembly. This dates back to the days of the Vikings who conducted open air assemblies in order to proclaim the laws of the land. This tradition is maintained once yearly on 5 July. The accompanying QSL, GDØLQE shows the assembly in 1979. The special prefix GT was used for the first time to celebrate the 1000th year of the parliamentary body, the Tynwald.

The best known sporting event on the island is undoubtedly the TT (Tourist Trophy) Races, a magnet for motorcycle enthusiasts from all over the world. Several Isle of Man radio operators use their QSLs to celebrate (and advertise) the event. As would be expected, tourism plays a most significant role in the Island's economy. It is a unique spot, having its

own currency and postage stamps, as well as offering excellent facilities for outdoor activities. Both air and ferry services are available from the surrounding mainlands for the prospective tourist.

Author's Note

These series of articles on the history of amateur radio through QSL cards are only possible with the cooperation of the radio amateur fraternity. If you should ever hear of QSL cards being destroyed (for whatever reason) would you draw his or her attention to the need of the collection for such cards? You might like to donate QSLs of your own, especially those you haven't looked at for years. All QSLs are appreciated, and the donation acknowledged both personally and in the

columns of AR. Please contact the writer of these articles, who is also the honorary curator of the collection.

Thanks

The WIA would like to thank the following for their kind contribution toward the collection. (Supplementary list):

Percy VK4CPA
Stephen VK2PS
Peter VK2FFA
Bill VK2XT
Mike VK8HD

Also, the family and friends of the following Silent Keys (supplementary list):
Geoff Hughes VK3AUX (courtesy of Milton VK3MN)

Gavin Douglas VK3YK (courtesy of Moorabbin and District Radio Club)

Ernie Baker VK2FP (courtesy of Bill VK2XT)

Chas Archbold VK2ARV (courtesy of Bill VK2XT)

Lay Cranch VK3CF
Alf Goebly VK4AAG

Errata


In last month's article entitled "The Senior Service — Part 3", it was stated that the ZC4HMS QSL shown celebrated 30 years of the Royal Navy 1960-1990. This should have read "30 years of the Royal Navy Amateur Radio Club 1960-1990".

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Ph (03) 728 5350

ar

GD6UW

LICENSED 1932



Cambridge University
Wireless Society



**Prevent pirates —
make sure you sell
your transmitter to
a licensed amateur.**

Contests

P Nesbit VK3APN — Federal Contest Coordinator*

Contest Calendar July-Sept 93

Jul 1	Canada Day CW/SSB	(Jun 93)
Jul 3	Australasian 80m CW Sprint	(Jun 93)
Jul 3	NZART 80m Memorial CWSSB	(Jun 93)
Jul 3/4	Venezuela SSB DX	(Jun 93)
Jul 10	Australasian Phone Sprint	(Jun 93)
Jul 10/11	IARU HF Championship	(Jun 93)
Jul 10/11	CQ WW VHF WPX Contest	
Jul 11	Jack Fies Memorial (SSB)	(Jun 93)
Jul 11	VKB Annual 80m Contest (SSB)	
Jul 17	Colombian Independence Day	
Jul 17/18	SEANET DX Contest (CW)	
Jul 24/25	Islands On The Air Contest (SSB)	
Jul 24/25	Venezuela CW DX	(Jun 93)
Aug 1	Jack Fies Memorial (CW)	(Jun 93)
Aug 1	VKB Annual 80m Contest (CW)	
Aug 7/8	YO DX Contest	
Aug 14/15	Remembrance Day Contest	
Aug 14/15	Worked All Europe CW	
Aug 14/15	SARTG RTTY Contest	
Aug 14/15	SEANET DX Contest (SSB)	
Sep 4/5	All Asia DX Contest (SSB)	
Sep 4/5	Bulgarian DX Contest	
Sep 11/12	Worked All Europe SSB	
Sep 18/19	SAC DX CW	
Sep 25/26	SAC DX Phone	
Sep 25/26	CQ WW RTTY DX Contest	

In addition to the 5 official contests run by the WIA each year, there are a number of other contests ranging from special interest (eg RTTY) to sprints. This month, this column pays tribute to the organisers of these contests, who invest considerable time, effort, and money (phone calls, postage) to make them enjoyable for YOU. Often, contest administration takes so much time that the organisers miss out on entering their favourite contests themselves. I would like to thank VKs 1PJ, 2BQS, 2SRM, 3KWA, 4LW, 4OR, 5OV, 6NE, 6NK, and ZL1AAS for their efforts in this regard. I would also like to thank the following for their letters, suggestions, and copies of rules, all much appreciated: VKs 2APK, 2BQQ, 2LQ, 2PS, 3DP, 3KPJ, 5AGX, and 8AV. I hope I haven't missed anyone, my apologies if your call isn't listed.

Please keep the letters coming, and especially, any spare copies of rules or results. Until next month, good contesting!

73
Peter VK3APN

Contest Details

The following contest details are supplemented by the "General Rules & Definitions" published in April AR.

CQ WW VHF WPX Contest

July 10/11, 1800z Sat — 2100z Sun

The object of this contest is to work as many amateurs as possible on the 50 MHz band and above using phone or CW. Categories include single operator fixed or portable; multioperator fixed or portable; rover (max 2 ops, must travel to > 1 prefix or grid square, must sign "rover" or /R). Exchange callsign and Maidenhead grid square (4 digits eg EM15) RS(T) is optional. Non-rover stations may be worked once per band, regardless of mode. Repeaters may not be used for contest QSOs. All QSOs above 300 GHz must use coherent radiation on transmit and employ at least one stage of electronic detection on receive. A station located exactly on a dividing line of a prefix or grid square must choose only one prefix or grid square for exchange purposes, and cannot use another prefix or grid square without moving the complete station at least 100m.

"The organisers miss out on entering their favourite contests themselves."

For each phone QSO, score 1 point on 50/144 MHz, 2 points on 432 MHz, 4 points on 1296 MHz, and 6 points on 2.3 GHz and above. For each CW/MCW QSO, claim an additional point. The multiplier is prefixes plus grid squares per band. Prefixes are as defined for the CQ WPX Contest (refer March 93). (Note: a rover who moves to a new prefix or grid square can count the same prefix or grid square again from the new QTH. QTH changes must be clearly shown in the log. Use separate log for each prefix and/or grid square. Non-rover stations may work a rover, and claim the appropriate points and multiplier/s, each time the rover moves to a new prefix or grid square). Final score = (points on band 1 + points on band 2 + points on band 3 + etc) x (prefixes & grid squares on band 1 + prefixes & grid squares on band 2 + prefixes & grid squares on band 3 + etc).

Send logs and summary sheet (standard format) postmarked by 31 August to: Joe Lynch N6CL, VHF WPX Contest, Box 73, Oklahoma City OK 73101, USA. ASCII logs on DOS disk are acceptable providing a hard copy is included. A comprehensive set of awards to the top scoring stations is offered.

Colombian Independence Day

July 17, 0000z — 2400z Sat.

This is a worldwide contest, all bands 80-10m, phone/CW. Categories are single operator, single and all band; multioperator, single and multioperator. "Call CQ HK" Exchange RS(T) plus serial number. Score 10 points for QSOs with HK HQ Stations, 5 points for each HK QSO, 3 points for each QSO with stations in another country, and 1 point for each QSO with stations in same country. Multiplier is total countries including HK plus HK call areas worked on each band. "HK" means all other Colombian prefixes as well. Final score is total QSO points from all bands x sum of multipliers from each band. At least 2% of QSOs must be with HK, and 10% with stations outside your country. Comprehensive awards include achievement certificates to each station making 100+ QSOs. Send logs postmarked by 31 August to: Liga Colombiana de Radioaficionados, Colombian Independence Day Contest, Apartado 584, Bogota, Colombia.

Islands On The Air Contest (SSB)

July 24/25, 1200z Sat — 1200z Sun

This contest is intended to promote contacts between qualifying IOTA island groups and the rest of the world, and to encourage expeditions to IOTA islands. In these rules "UK" means mainland G, GI, GM and GW only (ie IOTA references EU005 & EU115). Relevant sections are IOTA Island Stations (ie those with an IOTA reference, including GD/GJ/GU), World (excluding UK & IOTA stations); and SWL.

Use 80-10m, SSB only. UK stations may not use 3.5 or 7 MHz between 0800 and 1600z. In accordance with IARU resolutions, please avoid contesting on 3.65-3.70 and 14.3-14.35 MHz.

Exchange RS plus serial number, plus IOTA reference number if applicable. Score 15 points per QSO with an IOTA station (including UK), and 5 points for contacts with stations in another DXCC country. The multiplier is the total IOTA references per band added together. Final score is (total QSO points, all bands) x (total multipliers, all bands).

SWLs may only log stations outside their own country, except for new multipliers. Logs should include date/time, callsign of station heard, number sent, number received, callsign of station being worked, multiplier, QSO points. At least two other stations must be heard and logged, or else at least 10 minutes must elapse, before a callsign is repeated in the "station heard" column.

For each band submit a separate log, a list of all multipliers, and an alphabetically sorted checklist. Include a summary sheet for the whole contest. Logs on

computer disk are welcomed, in accordance with RSGB format. Send logs airmail to arrive by 31 August to: "RSGB IOTA Contest, c/o S Knowles G3UFY, 77 Bensham Manor Road, Thornton Heath, Surrey CR7 7AF, England". Certificates will be awarded to the leading stations in each section and continent

YO DX Contest

August 7/8, 2000z Sat — 1600z Sun.

Here is a good opportunity to catch up on some YO stations, who seem to be largely absent from the bands these days. In this contest everyone can work everyone on SSB and CW. Classes are single operator single/multiband, multioperator. Use 3510-60, 7010-40, 14010-060, 21010-060, 28010-060 (CW); 3700-75, 7040-90, 14150-250, 21200-300, 28400-600 (SSB). Exchange RS(T) plus ITU zone (P2=51, VK4/8=55, VK6=58, VK1/2/3/5/7=59). YOs will send RS(T) plus 2 letter county code. Score 8 points for YO QSOs, 4 points for QSOs outside Oceania, and 2 points for QSOs within Oceania. Final score = (QSO points) x (YO counties + ITU zones). Send logs to arrive by 31 August to: RARF, Box 05-50, R-76100 Bucharest, Romania.

Worked All Europe DX Contest

August 14/15 (CW), September 11/12 (SSB), November 13/14 (RTTY); 1200z Sat — 2400z Sun.

The CW section of this popular European contest unfortunately coincides with our RD contest, however with some finesse it is possible to mix the two. The object is to work European stations (except in the RTTY section, where anyone works anyone). Bands are 80-10m. In the contest, avoid 3550-3800 and 14075-14350 for CW, and 3650-3700 and 14300-14350 for SSB. The minimum time of operation on a band is 15 minutes, "although a quick band change to work a new multiplier is allowed" (don't ask me what that means — I'm equally baffled!) Categories are single operator all bands, multioperator single or multi-transmitter (TXs must be within 500m dia area; and SWL all bands. DX cluster support is allowed. Operate 30 hrs max; take up to 3 rest periods (mark them in the log).

Exchange RS(T) plus serial number. Additional points can be gained using QTCs, as follows: After working a number of European stations, details of those QSOs (ie QTCs) can be reported during a current QSO with another European station. In the CW and phone sections, QTCs are sent from non-European stations to European stations. In the RTTY section, QTCs can be sent to any station outside one's own WAC continent. A QTC contains the time, call sign, and QSO number of the station being reported, eg:

"1307/DA1AA431" means you worked DA1AA at 1307z and received serial number 431. Commence QTC traffic by sending the QTC series and number of QSOs to be reported, eg "QTC 3/7" indicates this is the 3rd series and that 7 QTCs will be sent. A QSO may be reported only once, and not back to the originating station. A maximum of 10 QTCs can be sent to the one station, who can be worked more than once to complete the quota. Only the original QSO, however, will have points value.

The multiplier is determined from the number of European countries worked on each band (or on RTTY only, the number of DXCC/WAE countries). On 80m the number of countries is multiplied by 4, on 40m by 3, and on 20/15/10m by 2. The total multiplier is the sum of the individual band multipliers. Final score = (QSOs + QTCs) x multiplier.

SWLs log each station only once per band. Logs must contain both call signs and at least one of the control numbers. Count 1 point for each station logged, and 1 point for each complete QTC received (max 10 per station).

Use standard log and summary sheet format. Include a checklist for more than 100 QSOs on any band, and if more than 100 QTCs have been sent, include another checklist to show that the quota of 10 QTCs per station is not exceeded. Logs can be submitted in ASCII on DOS disk, providing a paper summary sheet is included. Send logs to: WAEDC Contest Committee, Box 1126, D-74370 Sersheim, Fed. Republic of Germany. Deadlines are 15 Sept (CW), 15 Oct (SSB), 15 Dec (RTTY).

European countries are: C3 CT CU DL EA EA6 EI ES F G GD GI GM GM (Shetland) GU GW HA HB HB0 HV I IS IT JW (Bear) JW (Sputzbergen) JX LA LX LY LZ OE OH OH0 QJ OK OM ON OY OZ PA SS SM SP SV SV5 SV9 SY T7 TA TF TK UA1346 UA1N UA2 UB UC UO YL YO YU ZA ZB2 1A0 3A 4J1 4K2 4N4 4U (Geneva) 4U (Vienna) 9A 9H.

34th All-Easter DX Contest

June 19/20 (CW), September 4/5 (SSB); 0000 Sat — 2400z Sun

The rules for this contest unfortunately arrived too late for publication before the CW section, which occurred in June. Rather than wait until next month to publish the rules for the SSB section, I have decided to present the rules for both sections this month, so that VKs wishing to submit a log in the CW section can still do so.

The object is to contact as many stations in Asia as possible, on 160-10m (no WARC bands). Classes are single operator, single and multiband; and multioperator multiband. Call "CQ AA" or

"CQ Asia". Exchange RS(T) plus two figures denoting your age (YLS send "00"). For each QSO score 3 points on 160m, 2 points on 80m, and 1 point on other bands. The multiplier is the number of different Asian prefixes worked per band, according to CQ WPX rules (refer March 93). Example: JS9ABC/7 counts for prefix JS7. Note that J1 stations on Ogasawara (Bonin & Volcano) Isl belong to Asia, and J1 stations on Minamitori Shima (Marcus) Isl belong to Oceania. Final score is (total QSO pts on each band) x (total multiplier on each band).

Use standard log and summary sheet format, clearly showing new multipliers when first worked. Send logs postmarked by 30 July (CW) and 30 Sept (SSB) to: "JARL, AA DX Contest, Box 377, Tokyo Central, Japan". Indicate phone or CW on envelope. Awards include certificates to the top 1-5 stations in each country on each band (depending on activity), and medals to the continental leaders. For full results enclose IRC and SAE with log.

Asian prefixes are: A4 A5 A6 A7 A9 AP BV BY EP HL HS HZ JA J1 (Ogasawara) JT JY OD S2 TA UA9/U0 UF UG UH UI UJ UL UM V6 VU (Andaman & Nicobar) VU (Laccadive) XU XW XX9 XZ YA YI YK ZC4 1S (Spratly) 3W/XV 4S 4X/4Z 5B 70 8Q 9K 9M2 9N 9V; Abu Ail/Jabal at Tai.

* 24 Sovereign Way, Avondale Heights, 3034.

The 17th West Australian annual 80m CW & SSB Contests Transmitting and Receiving

When: 11 July (SSB), 1 August (CW); 1030-1330z Sunday

The object of this contest is to promote contacts between VK6 and the rest of Australia and overseas, and for SWLs, to hear and log as many VK6 stations as possible.

All contacts must be made in the 80m band using frequencies applicable to your licence. Call "CQ WA"; "CQ WAA"; or "CQ Contest". Keep CQs brief (3 x 3 max), as excessively long CQs may result in disqualification! Prearranged contacts are not allowed.

VK6 and VK4 stations will send RS(T) plus Shire Code. All others will send RS(T) plus serial number commencing at 001. Stations may be worked twice on the night, ie once during 1030-1300z, and again during 1300-1330z.

VK6 stations should claim 5 pts for each QSO with VK6, 2 pts for VK1/2/3/5/8, 10 pts for VK4, 4 pts for VK7, and 8 pts for VK9/0 & overseas. Stations outside VK6 should claim 3 points per QSO. Multiply the total number of points by 2 per VK6 Shire worked. Note VK6 stations north of the Tropic of Capricorn may apply a further multiplier of 1.3 to their overall score.

Log sheets should be headed with the date, call, and operator's name, and set out as follows

TIME	CALL	RST	SHIRE	SHIRE	POINTS
	WKO	OUT	IN	CODE	MULTI CLAIMED
1045	VK6-	59MV	59	PD	2 5
1105	VK6-	59MV	56	RB	2 5
1110	VK6-	59MV	550C1	-	2 2
1120	VK6-	59MV	59	MV	2 5
TOTALS =					6 17

In this example, the final score is $17 \times 6 = 102$ pts. If the log belonged to a VK6 station north of the Tropic of Capricorn, the final score would be $17 \times 6 \times 1.3 = 132.6$ pts

Total columns 6 & 7 at the foot of each page, and attach a summary sheet set out in the standard way (see "General Rules & Definitions", April), including total points scored, TX power, equipment and antennas, and comments on the contest in general. Send your log to: "WAA Contest Committee, 42 Kennedy Street, Melville, WA 6156" to arrive by 3 September for both contests. Results will be published in December AR.

VK6 Shire Codes are as follows:

AT Albany Town; AL Albany; AK Armadale; AM Augusta/Margaret River; BA Bassendean; BW Baywater; BV Beverley; BO Boddington; BD Boulder; BB Boyup Brook; BG Bridge-town/Greenbushes; BK Brooking; BE Broome; BH Broomehill; BL Belmont; BR Bruce Rock; BY Bunbury; BN Busselton; CA Canning; CL Capel; CH Carnamah; CN Carnarvon; CV Chapman Valley; CI Chittering; CT Claremont; CR Cockburn; CE Collie; CG Coolgardie; CW Coorow; CS Corrigin; CO Cottesloe; CK Cranbrook; CB Cuballing; CU Cue; CD Cunderdin; DU Dalwallinu; DN Dandaragan; DP Dardanup; DK Denmark; DB Donnybrook/Balingup; DR Downin; DG Dumbleyung; DS Dundas; EF East Fremantle; EP East Pilbara; ES Esperance; EH Exmouth; FM Fremantle; GG Gingin; GP Gnowangerup; GN Geraldton; GM Goomalling; GS Gosnells; GR Greenough; HC Halls Creek; HY Harvey; IR Irwin; KA Kalamunda; KL Kalgoorlie; KG Katanning; KN Kellerberrin; KT Kent; KP Kojonup; KD Kondinin; KO Koorda; KU Kulin; KW Kwinana; LG Lake Grace; LV Laverton; LA Leonora; MB Mandurah; MP Manjimup; MK Meekatharra; MV Melville; MZ Menzies; MD Merredin; MW Mingenew; MA Moore; MR Morawa; MS Mosman; MU Mukinbudin; ME Mullewa; MG Mundaring; MH Murchison; MY Murray; MM Mt. Magnet; ML Mt. Marshall; NP Nannup; NN Narembeen; NG Narrogin; NT Narrogin Town; NL Nedlands; NM Northam; NO Northam Town; NH Northampton; NG Nungadin; PG Peppermint Grove; PJ Perenjori; PH

Perth; PY Pingelly; PT Plantagenet; PD Port Hedland; QG Quairading; RT Ravensthorpe; RM Rockingham; RB Roebourne; SS Sandstone; SJ Serpentine/Jarrahdale; SB Shark Bay; SP South Perth; ST Stirling; SU Subiaco; SW Swan; TP Tambellup; TM Tammin; TS Three Springs; TY Toodyay; TG Trayning; UG Upper Gascoyne; VP Victoria Plains; WN Wagin; WD Wandering; WO Wanneroo; WR Waroona; WA West Arthur; WS Westonia; WP West Pilbara; WI Wickapin; WU Wiluna; WL Williams; WB Wongan/Ballidu; WG Woodanilling; WY Wyalkatchem; WE Wyndham/East Kimberley; WE West Kimberley; YO Yalgoo; YN Yilgarn; YK York

SWL ENTRIES: Rules and scoring are the same as for the Transmitting Section, as applicable. Only actual contacts may be logged, ie it is not permissible to log a station calling CQ. For each station heard, logs should show: Time (z), Station Heard, Station Called, RS(T) Sent, Shire Code, Shire Mult, Pts.

Cliff Waterman VK6NK
WAA Contest Manager

1993 VK/ZL/P2 Remembrance Day Contest

This contest commemorates amateurs who died during WWII, and is designed to encourage friendly participation and help improve the operating skills of participants. It is held annually during the weekend nearest 15 August, the date when hostilities ceased in the south-west Pacific area.

It is preceded by a short opening address by a notable personality, transmitted on various WIA frequencies during the 15 minutes immediately before the contest. During this ceremony, a roll call of those amateurs who paid the Supreme Sacrifice is read.

A perpetual trophy is awarded annually for competition between divisions of the Wireless Institute of Australia. It is inscribed with the names of those Australian amateurs who made the Supreme Sacrifice, to perpetuate their memory throughout amateur radio in Australia.

The name of the winning Division each year is also inscribed on the trophy and, in addition, that Division receives a certificate. The winning Division also holds the trophy for the next 12 months, after it is presented at the Annual Federal Convention.

Objective

Amateurs in each VK call area will endeavour to contact other amateurs in other VK call areas, P2 and ZL on 1.8-30MHz (10, 18 and 24MHz excluded).

On 50 MHz and above, amateurs may also contact other amateurs in their own call area

Contest Period

0800 UTC Saturday 14 August to 0759 UTC Sunday 15 August 1993. Stations are requested, as a mark of respect, to observe 15 minutes silence prior to the commencement of the contest. It is during this period that the opening ceremony is broadcasted.

Rules:

- The contest categories are:
 - High Frequency (HF) — for operation on bands below 50 MHz;
 - Very High Frequency (VHF) — for operation on the 50MHz band and above.
- Within each category the applicable sections are:
 - Transmitting Phone (AM, FM, SSB, TV);
 - Transmitting CW;
 - Transmitting Digital (RTTY, AMTOR, PACTOR, packet, etc)
 - Receiving (a), (b) or (c).
- All amateurs in Australia, Papua New Guinea and New Zealand may enter the contest, whether their stations are fixed, portable or mobile.
- Cross mode operation is permitted. Cross band operation is not permitted.
- Stations may be contacted once on each band using each mode, ie up to 3 times per band using Phone, CW, and Digital.
- On the 50MHz band and above, the same station in any call area may be worked using any of the modes listed at intervals of not less than 2 hours since the previous contact on that band and mode.
- Multi-operator stations are not permitted (except as in Rule 8), although log keepers are allowed. Only the licensed operator may make a contact under his or her own call sign. Should two or more operators wish to operate a particular station, each will be considered as a separate contestant and must submit a log under their own individual call sign
- Club stations may be operated by more than one operator, but only one operator may operate at any time, ie no multi-transmission.
- For a contact to be valid, serial numbers must be exchanged between the stations making the contact. The serial number will comprise 3 figures commencing at 001 for the first contact, and incremented by 1 for each

successive contact. If 999 is reached, the serial number will revert to 001. RS(T) reports are not required.

- Contacts via repeater (including satellite) are not permitted for scoring purposes. Contacts may be arranged through a repeater. The practice of operating on repeater frequencies in simplex is not permitted.
- A log of all contest contacts must be kept, and should be in the format shown below
- Score 1 point per completed valid contact.
- A summary sheet for each category entered must be submitted to the RD Contest Coordinator (RDCC) showing the following information: Category (HF or VHF); Section (Phone, CW, Digital, or Receiving); Callsign; Name; Address; Total score. Declaration: "I hereby certify that I have operated in accordance with the rules and spirit of the contest."
- Signed: _____ Date: _____
- Only the summary sheets for each category/section entered should be submitted. DO NOT send the contest log unless requested by the RDCC. The log should be retained by the entrant.
- Forward the summary sheet/s to: "RD Contest Coordinator, 2 Moes Court, Kingsley, WA 6026". Endorse the envelope "Remembrance Day Contest" on the front outside. Entries must be forwarded in time to reach the RDCC by Friday 10 September.
- All entrants making 10 contacts or more are eligible for awards. Certificates will be issued according to the Guidelines for Certificate Issue Remembrance Day Contest
- The RDCC may, at his discretion, request a log for checking. If your log is requested, ensure it contains the information shown in the example below before sending it.
- Any station observed as departing from the generally accepted codes of operating ethics may be disqualified.

Determination of Winning Division

Scores of VK0 stations are added to VK7 Scores of VK9 stations are added to the mainland VK call area which is geographically closest. Scores of P2 and ZL stations are not included in those of any VK call area, and are considered separately. The scores of entrants located outside their allocated call area will be credited to the call area in which they operate, ie the score of VK5XY2 will be credited to that of the VK2 Division.

The formula applied to determine the winning WIA Division is: (Total Contacts per Division)/(Total Licences per Division)

x (Weighting Factor). The Weighting Factors are calculated such that if each WIA Division were to perform as well in 1993 as during the preceding 4 years (averaged), the result would be a 7 year dead-heat. Consequently, the most improved Division will win the trophy, and also earn a revised and lower weighting factor for the following year.

Receiving Section Rules

- This section is open to all SWLs in Australia, Papua New Guinea, and New Zealand. No active transmitting station may enter this section.
- Rules are the same as for the Transmitting Section, as applicable.
- Only completed contacts may be logged, ie it is not permissible to log a station calling CQ. The details shown in the example must be recorded.
- The log should be in the format shown below.

Example Front Sheet

Remembrance Day Contest 1993

Category: HF

Section: Transmitting phone

Callsign: VK1XXX

Name: Joe Brown

Address: PO Box 123, Farm Orchard, ACT 2611

Total Score: 105

Declaration: I hereby certify that I have

operated in accordance with the rules and spirit of the contest.

Signed: J Brown Date: 20.8.93

Example Transmitting Log

Remembrance Day Contest 1993

Callsign: VK1XXX

Category: HF

Section: Transmitting phone

Date Time (UTC)	Band (MHz)	Mode	Call Snt	No Rcd	No Pts
0800	14	SSB	VK2QQ	001 002	1
0802	14	SSB	VK8LL	002 001	1
0805	14	SSB	VK5ANW	003 011	1
0807	14	SSB	ZL2AGQ	004 003	1
0809	14	SSB	VK4XX	005 007	1

Example Receiving Log

Remembrance Day Contest 1993

Name/SWL No: L30371

Category: HF

Section: Receiving phone

Date Time (UTC)	Band (MHz)	Mode	Calling	Called	No Snt	No Rcd	Pts
0800	14	SSB	VK1XXX	VK2QQ	001	002	1
0802	14	SSB	VK1XXX	VK8LL	002	001	1
0805	14	SSB	VK5ANW	VK1XXX	011	003	1
0807	14	SSB	ZL2AGQ	VK1XXX	003	004	1
0809	14	SSB	VK7AL	VK2PS	007	010	1

Neil Penfold VK6NE
RD Contest Coordinator

WICEN

News from WICEN (NSW) Inc

The Annual Coordinators Conference held in May was a success; a lot of emphasis being placed on electronic communications such as bulletin board systems (BBSs), and the USENET newsgroup "aus.radio.wicen" that is gatewayed into the FidoNet WICEN conference. We thank the people who attended, especially those who had far to travel. The next Coordinators Conference will be hosted by Greg Wilson VK2DIL in the Northern Rivers area around August or September.

As a result of assistance from VK3 WICEN, VK2 now has its own telephone BBS, which is linked into the ADMIN national disaster network. Information was sketchy at the time of writing, but full details will be released when the system is operational.

The weekly HF net appears to have been inactive for several months; as this can only raise the spectre of the hoary "City vs Country" argument, the committee would like to hear from anyone who is interested in running it again.

A calendar for the next few weeks follows, with the contact name given in brackets:

WICEN (NSW) AGM	10 Jul
Rescue Expo 93 (Alan VK2YJ)	16-18 Jul
WICEN Sydney South meeting	20 Ju
Kempsey/Timor Cave Rescue (Cave Rescue Squad)	24-25 Jul
Sutherland to Surf Fun Run (Kevin VK2CKD)	25 Jul
Yango Ride (John VK2GJB)	31 Ju-1 Aug
City to Surf Fun Run (Brett VK2XMU)	8 Aug
Batemans Bay Car Rally (Dave VK2BDJ)	14-15 Aug

It would be appreciated if all regions would submit publicity material in time for the weekly WIA broadcast, and to inform the executive committee of their activities, otherwise your actions will go unnoticed.

All WICEN personnel are reminded that the only postal contact with WICEN (NSW) Inc is PO Box 123, St Leonards 2065; all other addresses are null and void. WICEN (NSW) conducts nets at various times; the only one we know about is the Sydney VHF Net every Thursday night at 2130 local time on repeater 7150 in Chatswood.

Dave Horsfall VK2KFU
Publicity Officer
WICEN (NSW) Inc

Over to You — Member's Opinions

All letters from members will be considered for publication, but must be less than 300 words. The WIA accepts no responsibility for opinions expressed by correspondents.

Presumptuous Pirates

I am aware of a number of incidents where legitimate amateurs have been asked to vacate a frequency that is required for use by /MM amateurs, only to find that the amateur frequency has been vacated for a "pirate" station. The most recent incident of this was on 23.5.1993 when a NZ reciprocal licensee, using his VK4 call sign and located in Townsville, was in QSO with a NZ "non-licensed pirate" and exchanging illegal third-party traffic.

For a period of three minutes the frequency was unoccupied whilst the NZ unlicensed operator made an illegal third-party traffic phone call for his VK4 friend. During this period of silence, several legitimate amateurs attempted to use the frequency and were promptly told the frequency is in use, please QSY. They were not told that the frequency was in use by a pirate involved in illegal third-party traffic. The NZ station was involved in passing third-party traffic from the Suzuki Jeep agent, JJ's in Gore. This unlicensed operator is a regular on the 20m maritime mobile nets that operate at the top end of the 20m band, and is known to be unlicensed by the net controllers and net participants.

It is outrageous that the misuse of amateur radio has become so blatant that genuine amateurs involved in legitimate amateur activities are told to make way for illegal pirate traffic.

I am also aware that one NSW amateur, aware of my protests on these types of activities, has stated he will organise the yachting to get me stopped and have me silenced. I am not intimidated, and will not cease my protests. If anyone doubts the veracity of these statements, I hold audio tapes that clearly confirm my comments.

Thinking amateurs should stand up and be counted, and no longer tolerate the prostitution of amateur radio by this small group of parasites on our bands.

Deane Laws VK4ALN
27 Awoonga Av
Burleigh Heads QLD 4220

Morse Stories

The TV show "Inspector Morse" is on Channel 7 each Monday night. The musical background is very tastefully handled, and I enjoy the series very much. I wonder how many hams read the Morse letters spelling out "Morse", cleverly disguised in the concluding musical background to the credits.

This reminds me of a beautiful story, which I may have read in AR a long time ago, or perhaps in some other journal. My telling of it will not compare with the original, but it goes like this: The American telegraph company, Western Union, had advertised for a telegrapher (American for telegraphist) during the Depression. Applicants were invited to call at their central telegraph office for interview. They duly arrived, and were asked to sit in the large hallway adjacent to the noisy telegraph office. Many old friendships were renewed at that gathering. At one stage, one of the applicants got up from his chair and left the room. He returned again after a few minutes, and announced he had been given the job. One of the others asked how this had happened.

"Didn't you hear it?" he asked. "One of the sounders was asking any interested applicant to go to room 3."

Bob Slutzkin VK3SK
8 Lynedoch Av
Balclutha 3183

Origin of "Ham"

I wept crocodile tears (once again) as I read the heart-rending story of that brave little amateur station Hy-AI-Mu and its struggle for survival against the mighty forces of the US Wireless Regulations Bill, as published in AR for May 1993. This appears to be no more than just a fanciful story. Its origins evidently go back much further than "Florida Skip" of 1959, and it appears earlier to have been "doctored" (with slight variations) in the New York doctors' medical bulletin in 1947. Indeed, its provenance may even recede further into antiquity.

I enclose for your information copies of articles on this subject from the successive spring and summer 1991 issues of "Handi-Ham World", the newsletter published by Courage Handi-Ham System of Courage Center, 3915 Golden Valley Road, Golden Valley, Minnesota, USA 55422. No doubt there are even more versions of the origin of the term "ham", and it would be entertaining to hear them.

Laurie Walters VICDPO
523 Glenferrie Rd
Hawthorn 3122

(Editor's note: Laurie submitted several items, too detailed to publish here, in which an APRIL spokesman quoted the Harvard Wireless Club, the Congressional Record and Senator Walsh, all to the effect that Dr Hyman's story is a "figment of his imagination" ... VK3ABP).

A Tip for CW Operators

The following came from Bill Heinrich VK5HR, a former wartime signals officer in the RAAF:

At one time, in the tropics where QRN was a real problem, one of his operators found it was easier to read CW signals (and also exclude the QRN) by placing the headset on his cheekbones instead of the normal position over the ears.

Bill thinks perhaps this was a case of "bone conduction" (to the exclusion of QRN). A sort of unexpected QRN filter.

Bill says that in the air, say at 10,000 feet, there was less QRN than on the ground, where this method was effective.

He gives credit for the idea to a man who had no previous telegraphy experience before joining the RAAF.

I have not tried this idea myself, but am waiting for a suitably "difficult" occasion to arise.

Tom Laidler VK5TL
18 Albion Av
Glandore 5037

Commodore 64 Controlled Sending and Contesting

If you still own a Commodore 64 computer, don't throw it away. You can make it really work for you.

Use it for CW QSO sending, contest logging, dupe checking and much more.

With the greater availability of cheap Commodore 64 computers in recent years, keyboard sending and contesting are at your fingertips.

If you have not tried yet, you are missing out on a really interesting and enjoyable amateur radio communication.

Software programs and simple "key to TX interface" schematics are available free of charge from the writer. Send diskette, postage and packaging.

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GPO Box 3208
Sydney NSW 2001
Ph: (02) 957 6808

Stolen Equipment

Southern Peninsula Amateur Radio Club

The SPARC club rooms have been broken into twice in recent months. The first time a 25 A PSU and YAESU FT400 transceiver was stolen. On 16th June 1993, a KENWOOD TS520S HF transceiver, Serial No. 560762 was stolen. Enquiries to Max Morris VK3YBE (059) 85 2671, or the local police.

Education Notes

Brenda M Edmonds VK3KT*

From time to time I receive letters either commenting on statements I have made in this column or offering opinions on examinations and syllabus matters. Let me remind readers that "the views expressed are not necessarily those of the management". It is my experience that the most effective way to stimulate a response is to propose some major change in the status quo, or offer a wildly different interpretation of a commonly accepted document or policy.

The WIA is always pleased to receive comments from members (and non-members) on policy establishment and implementation. This is especially so in the examinations/education field. It is now some years since I was actively involved in running classes for intending amateurs, and I am quite sure that I am starting to get out of touch with the student population. I know that the syllabuses need revision — they were last revised in 1984 — and I have mentioned that many times.

Have the entry levels of the students changed in that time, or have community/hobby standards changed to make parts of the syllabus no longer relevant?

We accept that there has been a considerable amount of technical development in the last 10 years, but how much of that development should be applied to the incoming recruits? A good illustration is the current AOCPI/AOLCP syllabus Section 14, which covers the "Advanced Modes". It lists:

high definition television (ATV)
slow scan television (SSTV)
radio teletype (RTTY)
repeaters (FM and ATV)
satellite translators and transponders
beacons
techniques involving bandwidth compression (eg narrow band voice modulation)
computer controlled systems (AMTOR, packet radio etc).

Two questions per examination paper are to be taken from this section. Are all

of the above modes of equal importance to the student or in the overall profile of the hobby? Perhaps if knowledge of these modes is important to the student, it is also important to those of us who were examined before any of these techniques were in use. How about an "Upgrading" examination before any of the oldtimers are permitted to operate on any of these modes?

If, as proposed, Novices are to be permitted to use data modes, this must be reflected in the Novice syllabus, and suitable questions included in the examinations. I would be very pleased to receive any such questions from members for possible use in the question banks.

The big question, though, is what do we leave out to make room for all the new material to be included? Or do we go on expecting each generation of new amateurs to cope with an ever increasing body of knowledge? Let us not discourage potential amateurs by giving them mental indigestion before they begin.

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MF

Golden Days of Radio

Arthur J Brown VK2IK 33 Gloucester Rd, Epping 2121

Coinciding with Australia Post's four-stamp issue celebrating "the golden days of radio" on 13 June 1991, the display (at right) was set up in Epping Post Office NSW 2121. The display attracted a lot of interest, especially with the local schoolchildren. The post office officials asked for the display to remain longer than had been intended.

The articles on display, from left to right, are:

1. Pocket book, spider web coils, broadcast crystal set and phones, circa 1930.
2. Reis carbon microphone, built in 1934 for use on amateur station VK2IK. Commercially made mikes of this era were used on BC stations.
3. Working "Reinartz" radio of the late 1920s. Restored from original cabinet, Philips valves (A425, A409, B406). Ideal transformers and Amplion horn speaker. A few parts of the 1960s to eliminate the A, B and C batteries.
4. A couple of vintage valves of the '30s and '20s. Left: Philips PH280; right: Western Electric 4101DL, pip-type triode (intact filament).



Display in Epping NSW Post Office 12-19 June 1991. Old radio and Amateur Radio apparatus of the 1920 — 1930 period.

5. Home brew morse key, circa 1933. Made for morse practice and later used on amateur radio station VK2IK.
6. Experimental condenser microphones. Built in 1934 and used on AR station VK2IK until 1938.

ar

HF Predictions

Evan Jarman VK3ANI

The Tables Explained

The tables provide estimates of signal strength for each hour of the UTC day for the five bands from 14 to 28 MHz. The UTC hour is the first column; the second column lists the predicted MUF (maximum useable frequency); the third column the signal strength in dB relative to 1 μ V (dBu) at the MUF; the fourth column lists the "frequency of optimum travel" (FOT), or the optimum working frequency as it is more generally known.

The signal strengths are all shown in dB relative to a reference of 1 μ V in 50 Ohms at the receiver antenna input. The table below relates these figures to the

amateur S-point "standard" where S9 is 50 μ V at the receiver's input and the S-meter scale is 6 dB per S-point.

μ V in 50 ohms	S-points	dB(μ V)
50.00	S9	34
25.00	S8	28
12.50	S7	22
6.25	S6	16
3.12	S5	10
1.56	S4	4
0.78	S3	2
0.39	S2	-8
0.20	S1	-14

The tables are generated by the GRAPH-SD program from FT Promotions, assuming 100 W transmitter power out-

put, modest beam antennas (eg three element Yagi or cubical quad) and a short-term forecast of the sunspot number. Actual solar and geomagnetic activity will affect results observed.

The three regions cover stations within the following areas.

VK EAST The major part of NSW and Queensland.

VK WEST Southern-NSW, VK3, VK5 and VK7.

VK SOUTH The south-west of Western Australia.

Likewise, the overseas terminals cover substantial regions (eg "Europe" covers most of Western Europe and the UK).

The sunspot number used for these calculations is 63.3, while the predicted value for August is 60.8 and for September is 57.8.

VK EAST AFRICA

UTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5
1	8.7	8	8.9	-3	-28			
2	7.9	-1	8.1	-25				
3	7.9	-8	8.1	-4				
4	10.8	-1	8.4	1	-7	-19	-39	
5	17.7	4	12.2	2	3	-2	-12	-26
6	18.6	4	14.5	2	8	1	-8	-16
7	15.7	4	13.3	2	8	0	-8	-19
8	15.8	5	11.9	4	3	-3	-14	-26
9	13.7	4	10.2	4	0	-9	-24	
10	11.8	4	8.7	4	-4	-18	-36	
11	10.0	4	7.5	1	13	-30		
12	10.0	4	6.7	-1	-21			
13	8.5	13	6.3	-3				
14	8.5	21	6.5	-5	-35			
15	8.2	28	6.0	-8	-37			
16	8.2	28	6.1	-5	-36			
17	8.2	30	6.2	-7				
18	7.9	31	6.0	-9				
19	7.8	31	5.7	-13				
20	7.6	31	5.6	-11				
21	7.9	31	6.0	-10				
22	7.6	30	5.9	-13				
23	7.2	31	5.6	-15				
24	7.4	31	5.6	-12				

VK EAST EUROPE L/P

UTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5
1	14.9	15	10.1	15	10	3	-8	-22
2	14.1	15	9.8	16	10	1	-12	-28
3	13.3	15	9.1	17	8	-2	-17	-35
4	12.7	25	8.7	21	8	-5	-23	
5	12.7	23	8.8	19	7	-5	-23	
6	13.0	24	9.4	22	11	-8	-17	-35
7	14.5	20	10.7	20	9	-2	-18	
8	12.3	15	9.2	12	0	-13	-32	
9	10.5	6	7.8	5	-7	-20		
10	9.5	-4	7.0	1	-9			
11	8.9	-13	6.6	0	-8	-21	-39	
12	8.6	-23	6.3	-2	-9	-31	-39	
13	8.6	6.4	-12	-18				
14	8.6	6.4	-19	-24	-36			
15	8.6	6.4	-24	-37				
16	8.3	6.2	-31	-35				
17	7.8	5.9	-39					
18	7.9	6.1	-34					
19	8.6	-39	7.0	-13	-14	-22	-36	
20	12.7	-8	9.8	-4	-1	-6	-15	-26
21	16.0	1	12.2	-2	2	-1	-8	-16
22	17.5	7	12.0	5	7	4	-2	-11
23	18.6	12	11.4	11	11	6	-2	-12
24	15.8	13	10.7	13	11	5	-4	-16

VK EAST SOUTH PACIFIC

UTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5
1	23.9	24	18.0	33	32	28	22	13
2	23.8	24	17.9	33	32	28	21	13
3	23.7	24	17.6	33	32	28	22	13
4	23.3	25	17.5	37	34	29	21	12
5	22.1	27	16.7	40	36	29	20	8
6	20.2	27	16.4	38	32	27	16	5
7	17.9	33	15.5	42	32	22	7	-7
8	15.7	35	11.8	39	28	14	-3	-20
9	13.6	37	10.4	35	19	4	-14	-36
10	12.7	39	9.4	32	13	-3	-25	
11	11.7	39	8.8	29	8	-8	-32	
12	11.1	40	8.3	25	4	-14		
13	10.8	41	7.9	23	1	-18		
14	10.3	42	7.7	22	0	-21		
15	10.3	41	7.7	22	-1	-22		
16	9.5	42	7.2	17	-7	-30		
17	8.3	43	6.4	9	-20			
18	8.4	43	5.5	9	-19			
19	11.1	39	8.8	25	5	-14	-39	
20	15.8	31	12.2	35	24	13	-2	-19
21	19.9	27	15.3	38	31	24	-13	
22	22.3	25	17.1	35	32	27	19	9
23	23.2	24	17.9	34	32	28	20	11
24	23.6	24	17.9	33	32	28	21	12

VK EAST ASIA

LTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5
1	22.6	10	17.2	10	14	12	6	-1
2	22.6	10	17.2	9	14	12	6	-2
3	22.6	10	17.2	8	13	12	6	-2
4	22.6	10	17.4	21	9	14	12	-1
5	22.9	11	17.5	11	15	13	7	0
6	22.2	12	17.0	14	16	13	8	2
7	20.6	13	15.9	16	17	12	3	-7
8	19.0	16	14.4	24	18	10	-2	-17
9	17.2	19	13.2	28	16	5	-12	-30
10	15.4	22	11.8	26	11	-4	-25	
11	14.5	24	10.9	23	5	12	-37	
12	13.5	24	10.3	21	0	-19		
13	12.8	25	9.7	16	-5	-27		
14	12.1	25	9.3	14	11	35		
15	11.5	26	8.7	10	-17			
16	11.2	26	8.6	8	-20			
17	10.1	27	7.7	1	35			
18	8.4	28	6.5	20				
19	8.3	28	6.4	-22				
20	8.0	27	6.5	9	-18			
21	14.8	21	11.5	23	8	6	26	
22	16.8	14	18.1	22	15	13	-7	
23	22.6	13	17.3	17	18	15	8	
24	22.7	11	17.4	13	16	13	7	1

VK EAST MEDITERRANEAN

UTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5
1	14.0	5	10.6	5	4	-2	-14	-28
2	14.3	-1	10.7	-1	1	-2	-11	-33
3	17.3	1	12.9	7	1	-1	-3	-11
4	21.1	4	16.9	12	1	4	-2	-2
5	22.7	3	17.2	-15	0	3	2	-2
6	22.3	2	16.9	-15	0	2	1	-3
7	21.2	2	16.1	13	0	2	0	5
8	19.4	2	14.7	-8	1	2	-2	-8
9	17.2	2	13.9	-3	2	0	-6	-16
10	15.1	2	11.5	1	2	3	13	26
11	13.3	3	10.1	4	0	-6	-23	
12	12.1	5	9.1	5	-3	-14	-32	
13	11.4	10	8.6	7	-5	-20		
14	10.9	15	8.2	8	-9	-27		
15	10.5	22	8.0	8	-13	-34		
16	10.3	25	7.7	8	-15	-38		
17	10.2	27	7.7	8	16			
18	9.5	29	7.2	4	24			
19	8.4	30	6.4	5				
20	8.4	30	6.5	-5	-39			
21	11.0	26	8.2	13	10	32		
22	12.6	26	9.8	22	5	-9	-31	
23	12.0	18	9.2	14	0	14	35	
24	15.3	13	11.7	14	10	3	-9	-23

VK EAST USA/CARIBBEAN

UTC	MUF	dBu	FOT	14.2	18.1	21.2	24.9	28.5
1	22.9	5	17.3	-7	4	8	9	-2
2	22.8	7	17.2	0	8	8	5	-1
3	21.7	12	17.2	10	14	12	7	0
4	20.6	17	16.1	20	19	15	7	-2
5	19.2	21	15.3	29	23	17	7	-4
6	18.5	23	14.8	32	24	16	4	-9
7	17.7	22	13.5	31	20	10	4	-21
8	15.7	24	11.9	28	15	7	-16	-36
9	13.9	26	10.5	24	8	-8	-30	
10	12.7	27	9.8	20	1	17		
11	11.9	27	9.2	17	3	23		
12	11.3	28	8.6	14	-8	-30		
13	10.7	26	8.0	11	12	35		
14	10.4	18	7.8	6	-14	-34		
15	10.2	11	7.9	4	-13	-32		
16	9.4	0	7.2	0	16	-33		
17	8.1	-13	6.2	-4	19	-37		
18	8.1	-20	6.3	-3	-15	-31		
19	9.9	11	8.5	-2	-6	-15	-31	
20	15.8	2	12.1	8	1	-3	-11	-22
21	19.6	1	15.1	-10	0	1	2	-9
22	21.8	2	16.7	-13	0	2	0	-5
23	22.4	3	17.1	13	0	5	1	-3
24	22.7	3	17.2	11	1	4	2	3

VK SOUTH AFRICA

UTC	MUF	dBUI	FOT	14.2	18.1	21.2	24.9	28.5
1	8.4	19	6.4	-3	-30			
2	8.4	12	8.5	-3	27			
3	11.3	12	8.4	-6	27			
4	16.3	12	12.6	13	9	-1	-27	
5	18.5	8	14.9	9	8	4	-5	-17
6	19.5	7	15.7	7	8	5	-5	-16
7	19.8	6	16.0	7	8	5	-5	-16
8	17.4	7	13.8	7	6	1	-9	-22
9	15.5	7	12.3	8	8	4	-17	33
10	13.4	7	10.3	8	7	12	-29	3
11	15.5	8	9.0	5	11	-23		
12	9.9	9	7.7	1	-18	-38		
13	8.9	13	6.9	3	27			
14	8.4	30	6.4	-7	-38			
15	8.2	25	6.3	-8				
16	8.1	27	6.2	-9				
17	8.1	29	6.2	-10				
18	8.0	30	6.2	-11				
19	7.7	30	6.0	-14				
20	7.4	30	5.8	-17				
21	7.7	30	6.2	-9				
22	8.0	30	6.2	-9				
23	7.6	30	6.0	-13				
24	7.8	24	6.2	-10				

VK SOUTH SOUTH PACIFIC

UTC	MUF	dBUI	FOT	14.2	18.1	21.2	24.9	28.5
1	17.4	13	13.1	19	12	2	-13	-30
2	17.8	14	13.2	19	13	3	-11	-28
3	17.5	14	13.3	21	13	4	-11	-28
4	17.5	15	13.2	22	14	4	-11	-29
5	16.5	18	12.5	24	13	0	-17	-38
6	14.7	23	11.1	26	7	-9	-32	
7	13.4	26	9.7	28	5	-23		
8	11.3	28	8.5	12	15			
9	9.8	30	7.4	1	32			
10	8.9	31	6.7	-8				
11	8.1	32	6.0	-16				
12	7.6	33	5.7	-25				
13	7.4	33	5.5	-29				
14	7.3	33	5.4	-30				
15	7.4	33	5.5	-30				
16	6.8	35	5.2	-36				
17	6.8	34	5.3	-37				
18	6.7	34	5.1					
19	6.6	32	5.3	-38				
20	6.2	23	6.4	-15				
21	10.9	18	8.4	5	19			
22	13.5	15	10.4	13	-1	-17		
23	15.5	14	11.9	16	6	-5	-24	
24	16.7	13	12.7	18	10	0	-16	-35

VK WEST EUROPE L/P

UTC	MUF	dBUI	FOT	14.2	18.1	21.2	24.9	28.5
1	13.8	2	9.5	2	1	-4	-15	-28
2	12.9	5	9.1	6	1	7	20	-35
3	12.3	8	8.7	8	0	6	25	
4	11.7	10	8.1	9	0	0	-12	-29
5	12.0	12	8.6	10	0	-11	-29	
6	12.7	13	9.1	12	3	8	-24	
7	13.4	15	10.2	15	5	2	15	31
8	15.6	12	11.4	13	7	-2	-15	-30
9	13.5	9	11.1	8	0	10	-28	
10	11.5	2	8.9	2	6	18	36	
11	9.9	6	7.6	1	-10	-25		
12	8.9	15	6.8	-1	-11	-23		
13	8.4	30	6.4	11	20	33		
14	8.1	31	6.3	-23	31			
15	8.1	31	6.3	-23	31			
16	8.1	31	6.2					
17	8.1	31	6.2					
18	7.7	30	6.0					
19	7.4	30	5.7					
20	7.6	30	5.9					
21	8.9	27	6.7	32	34			
22	11.3	-16	9.8	-5	-10	-20	-34	
23	14.1	-7	10.7	-6	-3	7	15	-26
24	14.4	2	10.1	3	0	3	-11	-22

VK SOUTH ASIA

UTC	MUF	dBUI	FOT	14.2	18.1	21.2	24.9	28.5
1	18.8	8	14.3	7	8	4	-4	-15
2	19.3	7	14.8	5	8	5	-2	-13
3	19.7	7	14.8	5	8	5	-2	-13
4	19.8	7	14.8	5	8	5	-2	-13
5	19.4	9	14.8	7	9	6	-2	-13
6	18.8	9	14.2	9	9	6	-4	-18
7	17.8	10	13.3	12	9	2	-9	-23
8	16.8	13	11.9	16	-3	-10	-36	
9	15.8	13	10.4	16	-3	-10	-36	
10	11.8	21	8.9	9	-15	-39		
11	10.2	22	8.2	9	-35			
12	10.2	24	8.9	9				
13	8.7	25	6.5	-20				
14	8.4	26	6.2	-25				
15	8.2	26	6.1	-27				
16	8.3	25	6.2	-27				
17	8.3	25	6.3	-28				
18	7.9	25	6.0	-33				
19	7.8	25	6.0	-33				
20	7.4	28	5.7					
21	9.3	25	7.2	12				
22	12.6	11	10.7	7	-8	-25		
23	15.7	9	12.1	10	4	-19	-37	
24	17.8	8	13.8	9	6	2	-8	-21

VK SOUTH USA/CARIBBEAN

UTC	MUF	dBUI	FOT	14.2	18.1	21.2	24.9	28.5
1	22.5	9	16.8	4	10	10	5	-1
2	22.5	12	16.8	14	10	14	7	0
3	21.3	16	16.8	24	21	16	7	-2
4	19.4	19	14.9	30	23	15	4	-8
5	17.8	21	13.3	30	20	10	-3	-19
6	15.3	23	11.4	27	13	0	-18	-38
7	13.4	26	9.7	29	3	-14	-38	
8	11.1	28	8.3	13	-9	-31		
9	10.0	29	7.4	7	-20			
10	9.4	29	7.0	3	-26			
11	9.2	28	6.8	0	-31			
12	9.0	27	6.7	0	-30			
13	9.1	27	6.7	0	-25			
14	8.5	26	6.5	0	-28			
15	8.2	26	6.4	0	-36			
16	8.2	26	6.4	0	-36			
17	8.2	26	6.2	-3	-18			
18	8.4	27	6.4	-2	-14	-29		
19	10.4	28	8.7	0	-1	-8	-12	
20	13.8	5	10.6	-4	-1	-6	-16	-30
21	17.3	0	13.2	-7	0	0	-6	-15
22	19.8	1	15.1	-11	0	1	-1	-8
23	21.3	2	16.0	-11	0	2	0	-3
24	22.1	4	16.6	-9	2	4	2	-3

VK WEST MEDITERRANEAN

UTC	MUF	dBUI	FOT	14.2	18.1	21.2	24.9	28.5
1	20.5	10	15.5	13	13	9	0	-11
2	21.3	10	15.5	13	13	9	0	-11
3	21.3	10	15.5	13	13	9	0	-11
4	21.3	10	15.5	13	13	9	0	-11
5	21.3	10	15.5	13	13	9	0	-11
6	21.3	10	15.5	13	13	9	0	-11
7	21.3	10	15.5	13	13	9	0	-11
8	21.3	10	15.5	13	13	9	0	-11
9	21.3	10	15.5	13	13	9	0	-11
10	21.3	10	15.5	13	13	9	0	-11
11	21.3	10	15.5	13	13	9	0	-11
12	21.3	10	15.5	13	13	9	0	-11
13	21.3	10	15.5	13	13	9	0	-11
14	21.3	10	15.5	13	13	9	0	-11
15	21.3	10	15.5	13	13	9	0	-11
16	21.3	10	15.5	13	13	9	0	-11
17	21.3	10	15.5	13	13	9	0	-11
18	21.3	10	15.5	13	13	9	0	-11
19	21.3	10	15.5	13	13	9	0	-11
20	21.3	10	15.5	13	13	9	0	-11
21	21.3	10	15.5	13	13	9	0	-11
22	21.3	10	15.5	13	13	9	0	-11
23	21.3	10	15.5	13	13	9	0	-11
24	21.3	10	15.5	13	13	9	0	-11

VK SOUTH EUROPE L/P

UTC	MUF	dBUI	FOT	14.2	18.1	21.2	24.9	28.5
1	14.1	12	9.7	12	7	0	-12	-27
2	14.1	12	9.7	12	7	0	-12	-27
3	12.8	19	8.8	16	5	-6	-24	-35
4	12.1	24	8.5	19	4	-10	-30	
5	12.5	25	8.6	20	4	-10	-30	
6	12.0	25	9.3	20	8	-4	-22	
7	13.8	19	10.4	18	5	-8	-27	
8	11.8	14	9.1	9	-4	-19		
9	10.0	7	7.3	-12	-28	0	6	
10	8.0	-2	7.0	0	-14	-31		
11	8.5	-10	6.5	-1	-13	-29		
12	8.2	-20	6.3	-3	-14	-28		
13	8.1	-13	6.2	-3	-14	-28		
14	8.1	6	6.2	-25	-33			
15	8.1	6	6.3	-33				
16	7.6	12	5.8					
17	7.4	6.8						
18	7.7	6.0						
19	8.0	5.8	-35	-36				
20	11.4	-22	7	-1	-11	-22	-36	
21	14.1	-7	11.3	7	-1	-4	11	-22
22	16.4	-1	11.8	8	0	-1	7	-18
23	15.7	2	10.3	0	4	1	5	-15
24	14.8	7	10.3	7	6	1	5	-20

VK WEST AFRICA

WORLD WIDE AFRICA								
UTC	MUF	dBUI	FOT	14.2	18.1	21.2	24.9	28.5
1	7.9	24	6.1	-9				
2	8.2	24	6.1	-9				
3	11.0	12	8.2	7	-8	-25		
4	16.1	11	12.5	13	8	0	-13	-29
5	20.2	8	14.5	9	10	5	-1	-16
6	20.7	7	15.2	7	9	8	1	-12
7	20.	8	15.0	5	8	6	-2	-15
8	19.3	6	14.5	5	7	4	-4	-15
9	17.9	8	13.4	6	6	1	-8	-21
10	16.0	7	12.0	8	4	-3	-15	-31
11	14.5	9	11.0	5	0	-10	-26	-31
12	11.7	11	8.8	7	-7	-22		
13	10.1	18	7.5	3	-17	-30		
14	9.1	22	6.7	0	-28			
15	8.5	27	6.3	-4	-36			
16	8.3	29						
17	8.2	31	6.2	-7				
18	8.3	31	8.1	-7				
19	8.3	31	6.3	-6				
20	8.0	32						
21	7.5	32	5.8	-14				
22	7.7	32	5.9	-12				
23	6.4	32	6.4	-4	-39			

HAMADS

TRADE ADS

● **AMIDON FERROMAGNETIC CORES:** For all RF applications. Send business size SASE for date/price to RJ & US Imports, PO Box 431, Kiama NSW 2533 (no enquiries at office please ... 14 Boanyo Ave Kiama). Agencies at Geoff Wood Electronics, Sydney Webb Electronics, Albany; Assoc TV Service, Hobart Truscotts Electronic World, Melbourne

● **WEATHER FAX** programs for IBM XT/ATs *** "RADFAX2" \$35-00, is a high resolution shortwave weatherfax, morse and RTTY receiving program Suitable for CGA, EGA, VGA and Hercules cards (state which). Needs SSB HF radio and RADFAX decoder.

*** "SATFAX" \$45-00, is a NOAA Meteor and GMS weather satellite picture receiving program. Needs EGA or VGA & WEATHER FAX PC card, + 137 MHz Receiver

*** "MAXISAT" \$75-00 is similar to SATFAX but needs 2 MB of expanded memory (EMS 3.6 or 4.0) and 1024 x 788 SVGA card. All programs are on 5.25" or 3.5" disks (state which) plus documentation, add \$3-00 postage.

ONLY from M Delahunty, 42 Villiers St, New Farm QLD 4005 Ph (07) 358 2785.

● **HF MOBILE WHIP ANTENNAS**, ex RAAF, designed for helicopter use, remote tuning 2.3 MHz — 9.1 MHz, but easily modified for other tuning ranges, 12v tuning motor. Consists of a base loading coil in a 1.6 metre high radome with a straight 1 metre whip (standard 3/8-26 TPI thread) screwed on top. Unused units \$60, used but supposedly working order \$60, some used with no top whips \$50, all plus freight, (hopefully under \$20) from Dubbo. Needs simple control unit, circuit supplied. Phone (068) 88 5285 David Walters Electronic Services P/L. VK2AYO.

● **ACCOUNTING SOFTWARE** designed by Banking professionals, suitable for Small Businesses, Clubs, Membership Societies, and personal applications. Easy to operate, no special skills required. Financial reports include Cashbook, Profit/Loss, Balance Sheet, General Ledger, and Bank Reconciliation. User amenable Chart of Accounts built-in. Includes manual and on-line support, \$265-00. Stand-alone Invoices module, \$240-00. Fully integrated system of Accounting with Accounts Receivable and Payable, \$535-00. General business services, Hardware, LANs etc at competitive prices. 5% discount off all software for AR readers who quote this advert. Samples and demo disks (\$10-00, refundable on sale) available. **BOOKMATE COMPUTER SERVICES PTY LTD**, 6 Ann Court, Aspendale Vic 3195 (03) 580 6424 Fax (03) 580 8380 (VK3UV) A.C.N. 005 420 548

FOR SALE NSW

● **EIMAC socket SK800B**, chimney SK806, tubes 4CX1500B, JENNING'S vacuum relay. VK2DTR, (02) 918 3935

● **3 EL YAGI** 10-15-20m, \$150. VK2BPM (02) 623 3606

● **REALISTIC Comm Rx DX160**, 150 kHz to 30 MHz, \$50; **REALISTIC Comm Rx DX302** digital readout, 10 kHz to 30 MHz, \$150. ex VK2AMK (deceased) (043) 96 3172.

● **KENWOOD linear amp**, 2 kW PEP, rarely used, for quick sale \$2,000 (save \$1,000), S/N 2010080. VK2IH QTHR (043) 677 499.

● **AMATEUR RADIO PROGRAMS** for C64 sending CW and contests. Free of charge. Send diskette P&P, GPO Box 3209 Sydney NSW 2001. VK2BQQ (02) 957 8808

● **KENWOOD TS120V xcvr**, matching Kenwood TL120 Lin amp. Cables, manuals, \$690; **KENWOOD R2000** gen cov Rvr, mint cond, manual, \$650; all orig packing. Ron VK2AHI (066) 621 902

● **ALTRON 3 EL** mini beam, 6/10/15/20m, max elem length 3m, boom length 3m, complete with spare set coils and full instr Stan VK2DHS QTHR (02) 349 3741.

● **CA-SSS** trapped vertical antenna, 5 band, 3.6 MHz to 28.5 MHz. Tony VK2VMB QTHR (085) 686 754.

FOR SALE VIC

● **KENWOOD TS120S HF xcvr**, GC, \$475; **ICOM IC900A** 2m, 70 cm, 6m, minimal use, 25w O/P, \$965, **ICOM IC-HMB** mic \$40. Peter VK3YF (058) 216 070.

● **COLLINS KWM1** xcvr, VGC, incl DC PSU, H/bk etc, \$475. Rob VK3JE (080) 371 282 or (03) 584 5737.

● **GALAXY V MK2**, 80-10, xcvr, 400w PEP, with remote VFO, 800v PSU, spare 6HF5s, manual, as is \$150; **HT PSU**, transformer 750-1000-1250-1500 CT 200 mA, 8866, inc neg bias supply, both metered, in metal case, \$80; **Z80 MICROBEE** premium computer, double disk drive, amber mon, some keys faulty, plus software, \$100. VK3ADY QTHR (03) 499 2539.

● **COMPUTER monitor** (ex Microbee) 30 cm screen, green, phosphor CRT, input phono pin jacks, 75 ohm or higher impedance. Reasonable cond, best offer. VK3NFJ QTHR (03) 803 8888.

● **ICOM IC-229H** 2m 50w FM xcvr, gen cov rx. UT-50 CTCSS, serv manual, new price \$860. As new with orig packaging and access, \$550. Adam VK3ALM QTHR.

FOR SALE QLD

● **MONSTER ELECTRONICS SALE**, Kenwood, Icom xcvs, BIRD pwr meters (electronic parts), valves, transistors, coax, test eqpt, antenna bits etc. Location Lot 2 Markwell Road, Caboolture QLD. VK4BU QTHR contact via Fred VK4DY (074) 961 186. Res Rptr 8.00 am 17th Jy 93.

● **VALVES**, transmitting, receiving, collectors, renovators (state which), some unused, tested, Europeans, metals, numbers, rectifiers, regulators, sockets, ceramics, shields, 807, 6146, 6V6, 832, QV08/100, 6w, 12v, many types, reas prices. Ted VK4YG, QTHR Box 245 Ravenshoe (070) 976 387.

FOR SALE SA

● **KENWOOD TS130S**, 100w, WARC bands, base or bumper, five band hel/whip ant, SP40 mag spkr, bumper ant fits, PS30 DC reg PSU. Best offer. Bert VK5AUS QTHR (08) 344 5011.

FOR SALE WA

● **KENWOOD SW200 SWR & PWR** meter, \$80; **FT26** 2m handheld, \$300, 4 el cubical quad for 10 & 15m on 18ft boom, \$350. Dave VK6PDE (09) 398 3670.

WANTED NSW

● **HF BEAM**, tilt over tower, Rotator, Malcom VK2BMS QTHR (02) 257 4583 (bus) (02) 958 1114 (ah).

● **YAESU FT101**, early model considered, must have h/bk and ownership details. Good price for good unit. Write PO Box 353, Avalon Beach NSW 2107.

● **NALLY CRANK UP/TILT OVER** tower with/without rotator in good condition. VK2DM QTHR (049) 46 7674.

WANTED VIC

● **WHIP antenna**, Icom AH-2B complete with mounting h/wars. Hank VK3CAQ QTHR (051) 221 885.

WANTED QLD

● **TEN-TEC Century 21** or **DELTA** with manual. Must be in good cond. No mods. Also copy of manual for HEATHKIT "Q" multiplier mod QF1. Will cover photocopy costs. Dick VK4GOR QTHR (07) 379 1600.

● **CATHODE RAY TUBE** single gun, Hitachi SU1P or equiv for BWD 509B CRO. John VK4TL (070) 968 328.

● **OLD HF AMPLIFIERS**, basket cases or not, with PSUs. Prefer 813 decks but will consider others. Monoband or multiband units OK. Contact "Doc" VK4CMY for "Grande Belt Amateur Radio Group" (078) 616 200 (bus) (078) 852 167 (ah)

WANTED SA

● **CIRCUIT** for AWA RX type No IC8386, uses octal valves, copying costs paid. Andy VK5AAQ QTHR (08) 322 1010

WANTED TAS

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MISCELLANEOUS

● **PLEASE SEND** your donation of QSL cards, old or new, to the Hon Curator of WIA QSL Collection, VK3TLL, 4 Sunniss Hill Road, Montrose Vic 3765, or Tel (03) 728 5350. Let us save something for the future

Morseword 76

Solution Page 56

	1	2	3	4	5	6	7	8	9	10
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

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Across:

- 1 Part of a book
- 2 Severe
- 3 Donate
- 4 Council dues
- 5 Cuddle
- 6 Grow Dim
- 7 Writing Fluids
- 8 Indian cat
- 9 Private
- 10 Comforts

Down

- 1 Spouse
- 2 Poems
- 3 Port Phillip is one
- 4 Charter
- 5 Prison
- 6 Rips
- 7 Weirs
- 8 Thick
- 9 Former NSW premier
- 10 Fibs

Hamads

Please Note: If you are advertising items For Sale and Wanted please use a separate form for each. Include all details; eg Name, Address, Telephone Number (and STD code), on both forms. Please print copy for your Hamad as clearly as possible.

*Eight lines per issue free to all WIA members, sixth line for name and address.

Commercial rates apply for non-members. Please enclose a mailing label from this magazine with your Hamad.

*Deceased Estates: The full Hamad will appear in AR, even if the ad is not fully radio equipment.

*Copy typed or in block letters to PO Box 300,

Caulfield South, Vic 3162, by the deadline as indicated on page 1 of each issue.

*QTH means address is correct as set out in the WIA current Call Book.

*WIA policy recommends that Hamads include the serial number of all equipment offered for sale.

*Please enclose a self addressed stamped envelope if an acknowledgement is required that the Hamad has been received.

Ordinary Hamads submitted from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.

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State:

Not for publication:

☐ Miscellaneous

☐ For Sale

☐ Wanted

Name: Call Sign: Address:

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MAIL DISTRIBUTION:

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CONTRIBUTIONS TO AMATEUR RADIO

Amateur Radio is a forum for WIA members' amateur radio technical experiments, experiences, opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for possible publication. Articles on computer disk are especially welcome. The WIA cannot assume responsibility for loss or damage to any material. "How to Write for Amateur Radio" was published in the August 1992 issue of AR. A photocopy is available on receipt of a stamped, self addressed envelope.

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Available only until stocks are exhausted. \$4.00 to members, which includes postage within Australia.

PHOTOSTAT COPIES

When back issues are no longer available, photocopies of articles are available to members at \$2.50 each (plus \$2.00 for each additional issue in which the article appears).

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HOW TO JOIN THE WIA

Fill out the following form and send to:

The Membership Secretary
Wireless Institute of Australia
PO Box 300
Caulfield South, Vic 3162

I wish to obtain further information about the WIA.

Mr, Mrs, Miss, Ms:.....

Call Sign (if applicable):.....

Address:.....

State and Postcode:.....

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VK2	PO Box 73 Teralba NSW 2284
VK3	40G Victory Boulevard, Ashburton VIC 3147
VK4	GPO Box 638 Brisbane Qld 4001
VK5	PO Box 10092 Gouger Street Adelaide SA 5000
VK6	GPO Box F319 Perth WA 6001
VK7	GPO Box 371D Hobart Tas 7001
VK8	C/o H G Andersson VK8HA Box 619 Humpty Doo NT 0836
VK9/VK0	C/o Neil Penfold VK6NE 2 Moss Court Kingsley WA 6026

Solution to Morseword 76

Page 55

	1	2	3	4	5	6	7	8	9	10
1	*	*	*	*	*	*	*	*	*	*
2	*	*	*	*	*	*	*	*	*	*
3	*	*	*	*	*	*	*	*	*	*
4	*	*	*	*	*	*	*	*	*	*
5	*	*	*	*	*	*	*	*	*	*
6	*	*	*	*	*	*	*	*	*	*
7	*	*	*	*	*	*	*	*	*	*
8	*	*	*	*	*	*	*	*	*	*
9	*	*	*	*	*	*	*	*	*	*
10	*	*	*	*	*	*	*	*	*	*

Solution to Morseword 76

Across: 1 Page; 2 Grim; 3 Gave; 4 Rates; 5 Hug; 6 Fade; 7 Inks; 8 Tiger; 9 Inner; 10 Eases.
Down: 1 Wife; 2 Odes; 3 Bay; 4 Hire; 5 Jug; 6 Tears; 7 Dams; 8 Dense; 9 Wran; 10 Lies.



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